DEPARTMENT OF ENERGY
OFFICE OF
ENVIRONMENTAL MANAGEMENT

DEACTIVATION AND DECOMMISSIONING FOCUS AREA

MULTIYEAR PROGRAM PLAN FISCAL YEAR 2000-2004

September 1999

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Field Focus Area Manager

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Host Site Assistant Manager for EM

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Headquarters Focus Area Program Manager

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Focus Area Steering Committee Chairman

1. EXECUTIVE SUMMARY

The Deactivation and Decommissioning Focus Area (DDFA) Multiyear Program Plan provides strategic direction for the research, development and demonstration (RD&D) efforts during fiscal years (FY) 2000 to 2004, which lead to commercially viable, field deployable solutions to end-user needs. External and internal trends and forces, which influence the direction of the DDFA's effort, have been fully and thoughtfully considered in formulating the strategy detailed in this plan. The goals are to reduce the deactivation and decommissioning (D&D) costs/mortgage, reduce risks to the workers, public and the environment, and accelerate the D&D schedule. The DDFA is committed to reducing the U.S. Department of Energy Office of Environmental Management's (DOE-EM) D&D mortgage by 40 percent — a net reduction of $5 billion. The DDFA provides both improved technical solutions (technologies and systems) and expert technical assistance to the DOE Operations Offices and sites.

The DDFA planned budget for this FY2000-2004 period is $144 million, which is spread over the four product lines as follows:

- Reactor Facilities, $27M;
- Radionuclide Separations Facilities, $53M**;**
- Fuel and Weapons Components Fabrication Facilities, $51M;
- Laboratory Facilities, $14M.

In *Accelerating Cleanup: Paths to Closure (ACPtC)*, the DOE-EM D&D mortgage is estimated to be $12.5 billion. Nearly two-thirds of this D&D work will occur after FY2006. A recent report by the DOE Chief Financial Officer, estimates the D&D mortgage for DOE's Offices of Defense Programs (DP), Nuclear Energy (NE), and Energy Research (ER) to be $21 billion, cumulatively. Thus, the total estimated DOE mortgage is in excess of $33 billion. Though daunting, this represents a significant opportunity for the development and widespread deployment of improved technologies to reduce the life cycle cost of cleanup.

Through the National Decommissioning Committee and the National Facility Deactivation Initiative (NFDI) the DDFA works closely with the D&D problem holders. The DDFA partners with the DOE Operations Offices and site contractors through its Large-Scale Demonstration and Deployment (LSDDP) and Accelerated Site Technology Deployment (ASTD) projects. The first three LSDDPs were partnered efforts with the EM Office of Environmental Restoration (EM-40), as are two of the current four LSDDPs (four new LSDDPs were initiated in March 1998). The DDFA has taken a formal step in expanding its service to the Office of Nuclear Material and Facility Stabilization (EM-60) by negotiating one of these current four LSDDPs for the deactivation of a major facility at the Savannah River Site. Through this LSDDP, the hazard classification, and thus associated costs, of a major highly-enriched uranium fuel manufacturing facility will be downgraded. Also, the DDFA has partnered with the Office of Waste Management (EM-30) with an LSDDP at Los Alamos National Laboratory directed toward the disposition of plutonium-contaminated gloveboxes.

The DDFA also works closely with site end users through two recently implemented initiatives. The first project is the Canyon Disposition Initiative (CDI) implemented in March 1998 at Hanford. This project is utilizing the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigation/Feasibility Study (RI/FS) process to investigate disposition alternatives for the U-Plant (a chemical reprocessing canyon) and is working toward establishing a Record of Decision (ROD).

The CDI is cofunded and comanaged by EM-30/40/50/60, which may be the first time for such widespread cooperation within EM.

A second new DDFA initiative in partnership with EM-60 began in January 1999. This project, the Rocky Flats D&D Initiative (RFI), is critical to Rocky Flats being able to develop and implement a technical baseline for closure in FY2006, rather than the current FY2010 closure plan. This effort will enable simultaneous D&D of up to three of the plutonium laboratory buildings in the FY2001-2006 period, rather than sequentially.

The DDFA strategy is based, in part, on the realization that DOE-EM is not the only owner of nuclear facilities facing D&D. The commercial nuclear utilities (109 nuclear power plants in the U.S.), as well as university, medical and industrial facilities licensed (5000 licensees) by the U.S. Nuclear Regulatory Commission (NRC), share many of the same D&D problems as DOE. Because of the immediacy of this non-DOE D&D market, a substantial commercial D&D capability currently exists. In the short term, the DDFA is actively accessing this capability through its LSDDPs, emphasizing full-scale demonstrations employing suites of improved and innovative technologies within ongoing site D&D projects. This LSDDP strategy, initiated in January 1996 with the first three LSDDPs, reflects the DDFA's commitment to EM goals by not only ensuring effective solutions, but by also emphasizing rapid, widespread deployment of technologies to address the high costs and risks associated with the D&D of the Department's aging nuclear complex. The LSDDP strategy is already getting returns on its investment. With the successful conclusion of the first three LSDDPs, 56 full-scale demonstrations of new or improved D&D technologies were completed. The four ongoing LSDDPs have collectively demonstrated 17 additional new or improved D&D technologies. To date, 34 of the 73 demonstrated technologies have been subsequently deployed across the DOE weapons complex for a total of 154 times, and the number is growing.

For the longer term, the DDFA is conducting a balanced RD&D program ranging from basic science through applied research and engineering development, leading to the full-scale demonstration and deployment of D&D technologies and systems. These technical projects are linked to specific site D&D technical needs as identified by the Site Technology Coordination Groups (STCGs).

The DDFA is a focus area centered RD&D program encompassing D&D technical projects and activities within all elements of the EM Office of Science and Technology (OST) program, including: EM Science Program (EMSP); Characterization, Monitoring and Sensor Crosscut (CMST); Efficient Separations and Processing Crosscut (ESP); Robotics Crosscut (RBX); Industry Program (IP); University Program (UP); ASTDs; and Technology Applications Assistance, including the International Program.

Beginning in FY2000, the DDFA will enhance its technical resources through the use of Lead Laboratory affiliates. For DDFA, representatives from Oak Ridge National Laboratory (ORNL), the Florida International University Hemispheric Center for Environmental Technology (FIU-HCET), and the Electric Power Research Institute (EPRI) will provide their capabilities to ensure a full range of scientific, engineering, and management expertise to the focus area. The Lead Laboratory will be a full partner in DDFA's planning, execution, and evaluation activities. The Lead Laboratory will provide a specific and vital role by assessing end-user needs and recommending strategies leading to a balanced long-term portfolio of technology investments.

For more information on the DDFA and its program and project activities, please visit our web site at http://www.fetc.doe.gov/dd/.

2. PROGRAM BACKGROUND/PROBLEM DESCRIPTION

During the course of nuclear weapons production, DOE and its predecessor agencies constructed over 20,000 facilities. Many of these facilities are contaminated with radioactive materials, hazardous chemicals, asbestos, and lead (including lead paint), and have exceeded their design life of 30-40 years since their construction in the 1940s and 1950s. With the end of the cold war, approximately 5,000 of these facilities have completed their DOE mission and have been identified as "surplus." Of these, about 3,314 directly supported the nuclear weapons production program, whereas the remaining surplus facilities (approximately 1,692) were associated with non-weapons operations and research. Figure 1 shows the distribution of DOE's 3,314 surplus weapons production facilities by process category (*Linking Legacies*; January 1997). Since these aging surplus facilities no longer serve a mission, DOE-EM plans to D&D them in order to reduce its cost to monitor and maintain the facilities; decrease the potential for release of radioactive and hazardous materials to the environment and local communities; and decrease the risk of industrial safety accidents due to the continued deterioration of these facilities.

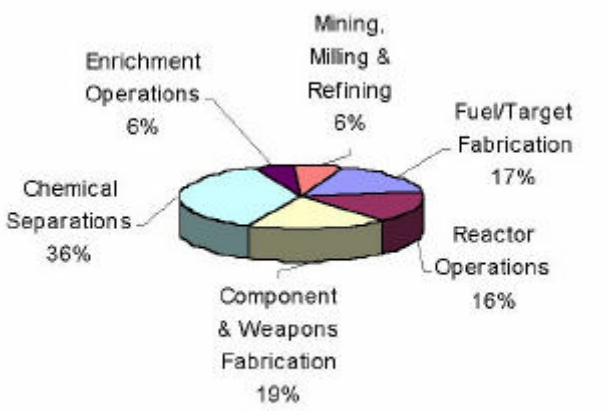


Figure 1. DOE Surplus Facilities, by Process Type

Based on the FY1999 ACPtC data available through the web-based Integrated Planning, Accountability, and Budgeting System (IPABS; http://idms.em.doe.gov/idms/), the DOE-EM mortgage for D&D services is estimated at a life-cycle cost of about $12.5 billion. Figure 2 shows the D&D pre-FY2007 and post-FY2006 life-cycle costs for the major DOE sites.

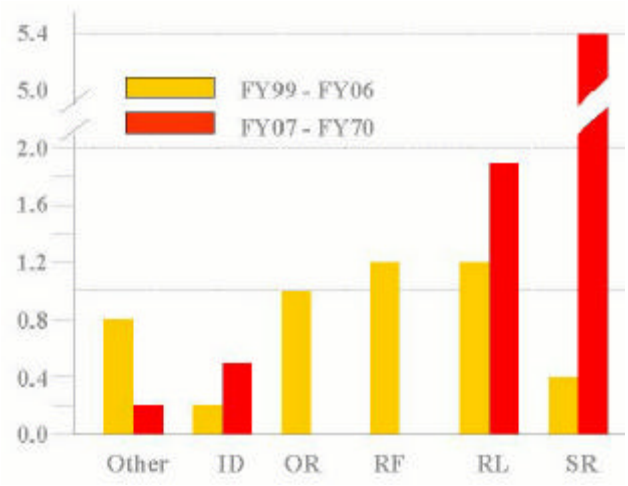


Figure 2. EM's Estimated D&D Mortgage, by Site ($ billion)

The Savannah River Site (47%) and the Hanford Reservation (25%) constitute over 70% of the total DOE-EM D&D mortgage (Figure 3). Adding in Oak Ridge (7%), Idaho (5%), and Rocky Flats (9%) brings the total for these five operation offices to 93% of the current total DOE-EM D&D mortgage. These EM estimates are considered lower-bounds as it appears that some EM costs have not yet been baselined. A detailed analysis of the D&D information in the ACPtC can be found in "The U.S. Department of Energy's Market for Deactivation and Decommissioning Services" presented at the American Nuclear Society's Second Topical Meeting and Exhibition on Decommissioning, Decontamination, and Reutilization held in Knoxville, Tennessee during the week of September 13, 1999.

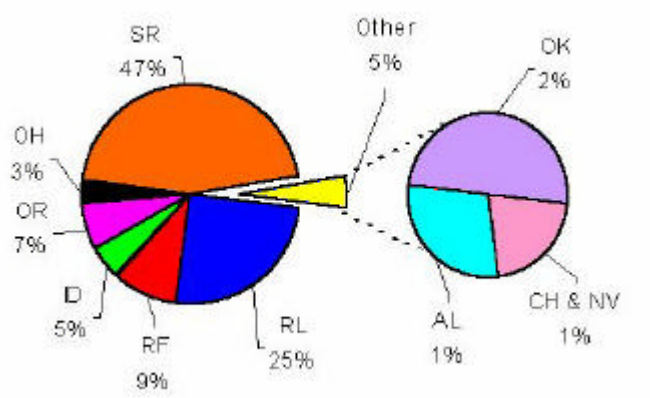


Figure 3. Percentage of EM's Life-cycle D&D Mortgage, by Site

In addition to surplus facilities for which EM has responsibility to disposition, there are an estimated 10,000 buildings owned by DOE's DP, NE, and ER Offices. In the DOE's FY1997 Annual Report - notes to the Financial Statement, the DOE Chief Financial Officer estimated the eventual cost to stabilize, deactivate and decommission these facilities and structures to be about $20.7 billion (http://www.cfo.doe.gov/ficor/97constm/97notes.pdf). Thus, the total DOE mortgage for D&D services can be conservatively estimated in excess of $33 billion. This *mortgage*, though daunting, represents a significant opportunity for the development and widespread deployment of improved D&D technologies to reduce the life-cycle cost of cleanup.

Deactivation includes activities undertaken with the intent to reduce the physical risks and hazards at these facilities, to decrease costs associated with facility mortgage, and make these facilities available for potential reuse or eventual decommissioning. This includes planning, removal of surplus materials, chemicals, supplies, classified equipment and documents, and stabilization of radioactive contamination. It also includes recycling, minimization, treatment, storage and disposal of all secondary wastes generated during deactivation. Deactivation costs also include pre-deactivation surveillance and maintenance (S&M) and post-deactivation long-term monitoring. The intent of these activities is to maintain surplus facilities in a safe and stable condition prior to deactivation (pre-deactivation S&M) and while awaiting final decommissioning (post-deactivation long-term monitoring), respectively.

Decommissioning includes activities associated with decontamination, demolition and final disposition of the facility and the equipment contained within it. This includes developing required regulatory and project management documents, characterization and engineering work plans to establish cleanup criteria, characterization reports, decontamination and dismantlement, disposing of contaminated waste, verifying project completion, and issuing completion reports. Also included in decommissioning are the costs associated with conducting S&M of surplus facilities awaiting decommissioning.

In the past, deactivation was typically the responsibility of EM-60, whereas decommissioning was typically the responsibility of EM-40. This division of D&D responsibility was not a hard and fast rule, because EM-60 would sometimes take the facilities it owned to a final disposition end state, and EM-40 would sometimes deactivate its facilities to a temporary state awaiting sufficient funding to perform complete decommissioning. Furthermore, EM-30 would also perform D&D on buildings it owned (e.g., laboratory facilities and waste handling/treatment facilities). On September 1, 1999, Assistant Secretary Dr. Huntoon announced her plans for a reorganization of EM. This reorganization will result in a new EM organizational structure that includes: the Office of Site Closure, the Office of Project Completion, and the Office of Integration and Disposition. The Office of Site Closure will complete the EM activities at Rocky Flats, Ohio, Oak Ridge, Albuquerque, Oakland, Nevada, and Chicago and the Office of Project Completion will be responsible for completing the EM mission at Richland (including the Office of River Protection), Idaho, and Savannah River. The new organizational structure is based on site closure status and as such, it is likely that both deactivation and decommissioning will occur in both of these new Offices. The responsibilities of the new Office of Integration and Disposition are the Waste Isolation Pilot Plant (WIPP),

waste type planning, and some activities previously addressed by EM-40. As a R&D organization responsive to end-user needs, the DDFA does not anticipate much change in the way it conducts business as a result of the EM reorganization.

DOE-EM typically performs decommissioning under CERCLA as a Non-Time Critical Removal Action. In fact, there are few regulatory compliance agreements at DOE sites that specify D&D activities. Most of the site Federal Facility Agreements deal with legacy waste (e.g., high-level waste [HLW}; transuranic [TRU]; mixed low-level waste [MLLW]; etc.) and contaminated soil and groundwater problems, not with contaminated buildings. Sites with D&D compliance drivers include: Fernald, Mound, Rocky Flats, and portions of Hanford, the Idaho National Engineering and Environmental Laboratory (INEEL), Oak Ridge, and Savannah River. Three sites are designated as EM Closure Sites (Fernald, Mound, and Rocky Flats) with site closure nominally planned by the end of FY2006 (provided that sufficient annual funding is available). Given currently planned funding scenarios, Mound is expected to close by the end of FY2003, and Fernald and Rocky Flats by the end of FY2006.

The final end states for most DOE-EM buildings have not been defined. These end states range from administrative controls to various brownfields to a few greenfields. End states are being, and will be negotiated, by the Department working with the regulators (State and Federal) and local stakeholders. Many DOE sites are in lightly populated areas in which DOE and its site contractors are the major source of employment (Hanford; INEEL; Oak Ridge; Savannah River). At these sites, economic development is a major goal of the cleanup programs. Local stakeholders (cities; counties; economic development groups; environmental groups; tribal nations; site workers; local public) are particularly interested in transitioning DOE site jobs to other jobs for their communities.

While D&D can be performed utilizing baseline technologies and current engineering practices at an estimated cost of at least $12.5 billion, the DOE site problem holders have identified 158 D&D technical and basic science needs in FY1999 that must be satisfied in order to accomplish (i.e., enabling technologies), or improve upon the current technical baseline. In addition, the DDFA currently tracks another 22 technical needs currently assigned to other focus areas (e.g., Mixed Waste, Tanks, and Nuclear Material focus areas) for which D&D solutions may apply. Given the long-term mission of the DOE D&D program, these needs are not the full life cycle set, and will change over the next several years as the sites make progress toward their D&D cleanup goals and technical solutions are delivered for their early problem sets.

The 180 FY1999 active needs (163 technical and 17 science) identified by the sites and tracked by the DDFA are grouped by D&D technology or problem area as shown in Figure 4.

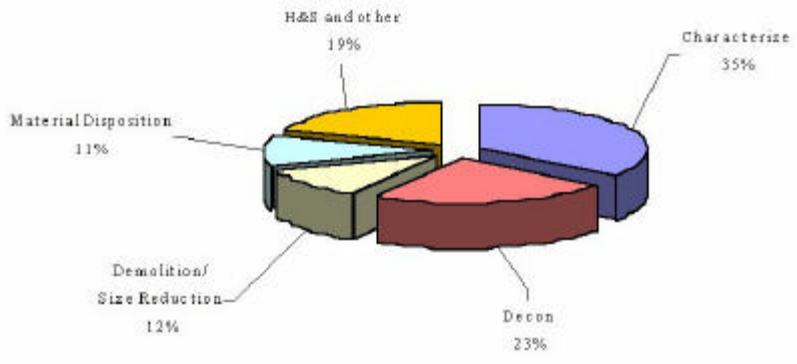
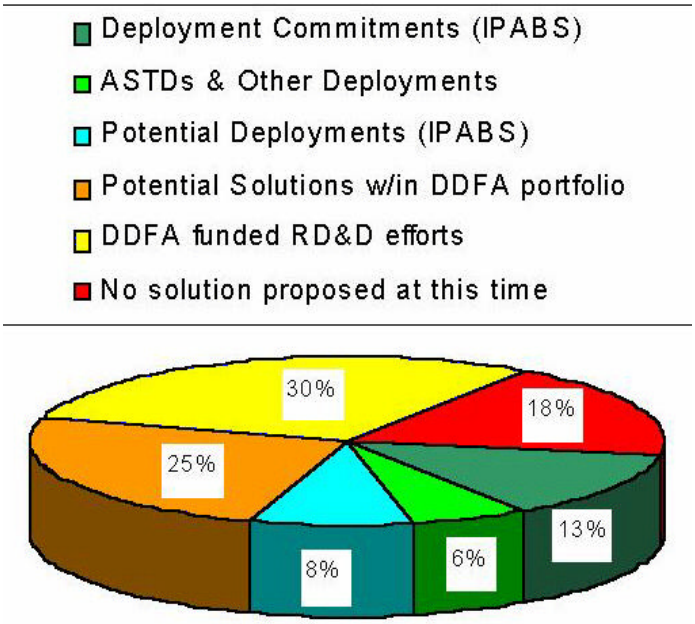


Figure 4. D&D Needs by Problem Area

Of the 180 needs identified, 33 are identified as high priority, 94 as medium priority, and the remaining 53 are low priority or have no priority identified.

Figure 5. Disposition of DDFA 's FY1999 Site Needs

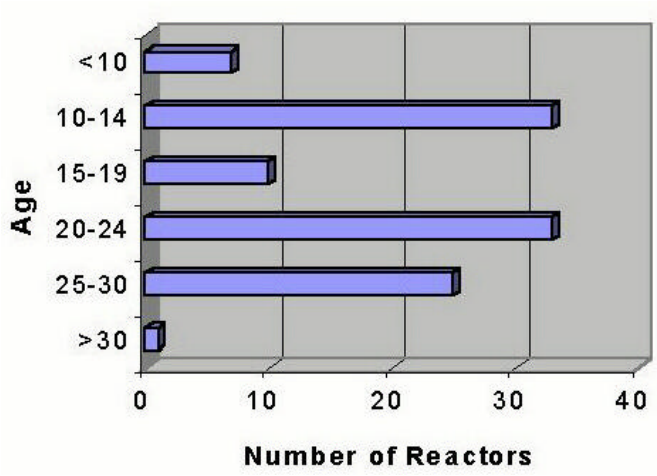


As part of the FY1999 Technical Needs Response process, the DDFA provided DOE/EM sites with information on potential technology solutions for 99 of the 158 needs assigned to the focus area. These potential solutions were selected from OST developed technologies, non-OST commercially available technologies, and ongoing DDFA RD&D efforts that may provide partial or complete solution to the need. Of the remaining 59 needs for which no immediate technology solution was identified, 28 of these needs were submitted after the Technical Needs Response process was complete. Thus, only 31 of the FY1999 D&D needs had no proposed technological solution nor ongoing RD&D efforts to address the need at the time of the response.

Figure 5 depicts the current status of the 158 D&D needs. DDFA efforts have provided technical solutions (i.e., site claimed deployment commitments and other non-claimed deployments including ongoing ATSDs) to address 19% of the needs. Potential solutions have been identified, which if deployed, may partially or completely satisfy another 33% of the needs. This latter group, comprised of potential solutions identified by the sites in IPABS and solutions recommended by the DDFA from its portfolio of demonstrated technologies, represents opportunities to market improved and innovative technologies to site end users through technical assistance and communication of the technology's improved cost and performance. The DDFA is currently funding efforts to address 30% of the remaining needs; this represents the near-term RD&D market, which the DDFA is addressing foremost in its FY2000-2004 program. The remaining 18% of the needs currently have no identified solution that can improve upon baseline or, in the case where no baseline exists, provide enabling capabilities. These needs represent the mid- to long-term RD&D market that will be addressed by the DDFA during this planning period (i.e., FY2000-2004) and beyond. As the DOE sites better refine their D&D technical baselines and facility end states over the next several years, additional D&D technical needs will be identified and solutions pursued. A detailed analysis of the current disposition of the 158 D&D needs is presented in Appendix B.

In the D&D problem area, DOE is one of two major owners of radiologically-contaminated facilities facing D&D; the commercial nuclear utilities are the other major owner. There are 442 commercial nuclear power plants worldwide, of which 109 are located in the U.S. Figure 6 displays the average age of the reactors in the U.S. Several of these facilities are currently in or slated for D&D and, due to deregulation of the electric power industry and the number of facilities approaching their expected operational life (NRC nuclear power plant licenses are for 40 years), many more are expected to enter D&D in the next ten years. The current estimated D&D cost for one such nuclear power plant is $400-500 million (in current year dollars), which includes the cost of temporary storage of spent fuel until the DOE geological repository opens sometime in the 2010-2016 period. Clearly, the commercial nuclear sector faces substantially higher D&D costs than does DOE.

Figure 6. Average Age of U.S. Commercial Nuclear Reactors



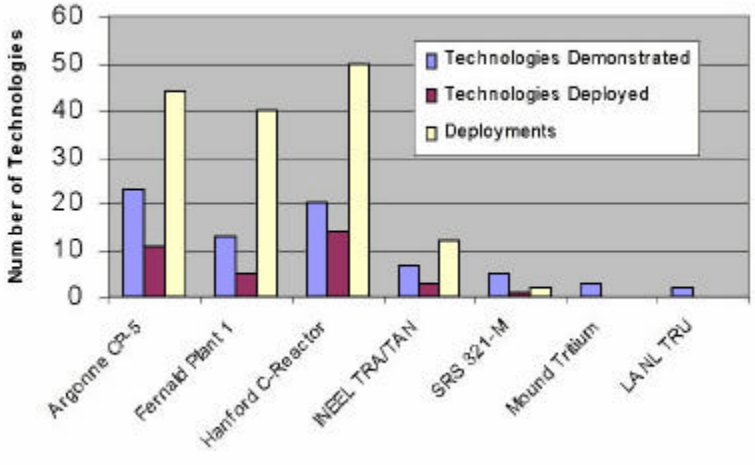
In contrast to other EM problem areas, considerable D&D expertise resides in the commercial nuclear sector, both within the nuclear utilities and the commercial contractor firms which perform their D&D. The DDFA is collaborating with these groups in two ways. First, the Integrating Contractor Teams (ICT) established to manage each LSDDP typically include commercial D&D firms and often, commercial utilities. These companies bring outside expertise and knowledge of innovative and improved D&D technologies for use within DOE. In addition, the information and knowledge gained as a member of the LSDDP ICT can then be transferred to the commercial sector for use in future DOE and non-DOE D&D projects. The second way in which DDFA engages these groups is through the Memorandum of Understanding (MOU) between DOE, EPRI and major utilities. The MOU, signed on December 3, 1997, establishes a mechanism to facilitate the exchange of best business practices and lessons learned, and to plan/manage a leveraged RD&D program which meets the D&D technical needs of both DOE and the commercial nuclear utilities.

The DDFA is a comprehensive program addressing D&D needs through basic science grants, applied R&D and engineering projects, and full-scale demonstration and deployment of improved and innovative D&D technologies and systems. The program is directly linked to EM's ACPtC plan activities in order to provide immediate and substantial life-cycle cost savings in the areas of deactivation and decommissioning, including waste management, environmental restoration and material & facility stabilization.

The DDFA gas already achieved a number of successes. Figure 7 displays the success statistics resulting from the LSDDPs supported by the Focus Area. Detailed information on technologies demonstrated with in the LSDDPs and deployed subsequent to full-scale demonstration can be found in OST's Technology Management System, located on the internet at http://ost.em.doe.gov/tms/Home/Entry.asp.

Figure 7. Success Statistics for the Large-scale Demonstration and Deployment Program

- ***73 technologies demonstrated***
- ***34 technologies deployed***
- ***154 deployments***



3. VISION AND MISSION

The DDFA mission is:

Identify, develop, demonstrate, and assist the deployment of improved technology systems which reduce costs/mortgages, reduce risks to the workers/public/ environment, and accelerate schedules for the deactivation, decontamination, and decommissioning of DOE's radiologically-contaminated surplus facilities.

Table 1. D&D Life-cycle Costs as Reported in the ACPtC (in millions of constant 1999 dollars)

	FY1999-2006	FY2007-2070	FY1999-2070
Deactivation	1,958	7,396	9,354
Decommissioning	2,609	580	3,190
Total	4,567	7,977	12,544

The DDFA vision is to reduce the EM's overall life-cycle cost/mortgage for D&D of $12.5 billion, as reported in the ACPtC site summary level data (Table 1), by 40%, to $7.4 billion. Based on validated cost reductions of 20-40% for improved technologies demonstrated with the LSDDPs and their subsequent deployments, the DDFA believes that EM's near-term (through FY2006) D&D mortgage of $4.6 billion can be reduced by 25% for a net reduction of $1.1 billion. Furthermore, based on results achieved by best-in-class R&D organizations, investments in basic science can be expected to result in returns-on-investment (ROI) of 20-100. Though investments in basic science tend to be high payoff, they are also high risk. Thus, DDFA fully recognizes that some basic science endeavors will result in zero ROI. It is therefore not unreasonable to assume an average cost reduction of 50%, resulting in a $4 billion cost/mortgage reduction for post-2006 D&D projects.

To achieve this vision, the DDFA will manage a robust RD&D program designed to facilitate the deployment of more cost-effective and/or higher productivity technologies throughout the DOE complex. In addition to reducing costs, these improved technologies also promise to reduce risks and shorten D&D schedules. In some cases, these improved technologies provide the only solution for a particular D&D problem, i.e., an enabling technology. The near-term strategy of the DDFA encompasses the comprehensive demonstration of existing technologies alongside baseline D&D technologies and the implementation of commercially available practices within the LSDDPs. This approach targets near-term (FY2000-2006 planning horizon) site D&D projects for subsequent deployments so that cost savings can be quickly realized. The long-term (post-FY2006) DDFA strategy is based on the recognition that many facilities will be maintained in a surveillance and maintenance status until such time that appropriate levels of funding are made available to pursue D&D activities. Where applicable, the DDFA will work with site project managers to identify opportunities to insert new and improved D&D technologies and to accelerate D&D schedules so that long-term S&M costs can be avoided or minimized. Central to the DDFA long-term strategy is the identification and prioritization of those problems with the highest complex-wide ROI.

The DDFA partners with DOE end users, industry, universities, and international programs to achieve its goals. By involving problem holders and solution providers in the program, the Focus Area ensures that the most pressing D&D problems are accurately identified, and that the best resources are used to help bring better technologies to the D&D marketplace.

4. GOALS AND STRATEGIES

This Multiyear Program Plan provides a framework for the strategies and activities to be conducted by the DDFA over the FY2000-2004 period. These strategies and activities support EM's four major Science and Technology Program thrust areas.

1) Accelerate Technology Deployment - **Goal: deploy 5 first time technologies annually**

Strategy

Buy technologies (if available in the private sector), rather than make;
Demonstrate technologies in LSDDPs, rather than develop;
Conduct unbiased cost analyses and publish Innovative Technology Summary Reports for all LSDDP-demonstrated technologies; and,
Deploy successfully demonstrated technologies at multiple sites and for multiple applications.

2) Reduce the cost of EM's major cost centers - **Goal: reduce current mortgage for D&D by 40%**

Strategy

Analyze ACPtC data to identify and assess major D&D cost centers, and develop "project-level roadmaps" which will lead to the development of near-and long-term solutions to reduce costs;
Develop technologies through supporting programs (Industry/University Programs, Crosscutting Programs and Basic Science);
Demonstrate technologies improved and innovative technologies side-by-side with baseline technologies in an LSDDP at full-scale as part of ongoing D&D activity; and
Collect all necessary data to fully assess the cost and performance of the improved or innovative technology against the baseline.

3) Meet high priority needs - **Goal: address all high priority needs**

Strategy

Ensure programmatic goals and strategies target high-priority end-user needs and those needs designated on the critical path to site closure list;
Provide a balanced portfolio of near- and long-term RD&D investments;
Ensure full and open communication between end users, technology developers, and technology providers; and
Nurture private sector partnerships to develop common solutions and to address common problems.

4) Reduce EM's technological risk - **Goal: verify cost and performance for all full-scale technologies**

Consider risk-based criteria in the RD&D portfolio investment analysis and LSDDP selection processes;
Utilize project-level roadmaps to ensure RD&D investments address critical needs and technological gaps, and reduce the cost, schedule, and technology risk associated with cleanup;
Conduct human factor assessments to ensure worker safety and health considerations are taken into full account during development;
Reduce risk and liability associated with first-time technology use through demonstration in an ongoing D&D project as part of an LSDDP; and,
Take advantage of successful demonstrations/deployments by transferring technology to multiple sites for further application.

Deactivation and Decommissioning is the assemblage of operations which can be generally grouped into five principal technology or problem areas. These technology areas are:

- Characterization and Monitoring
- Decontamination of Facilities and Equipment
- Dismantlement/Size Reduction
- Waste Disposition and Recycle
- Worker Health and Safety

In general, technologies in these areas have application for both deactivation and decommissioning operations. To effectively manage its RD&D program in support of these technology areas, the DDFA established (beginning in FY1999) four product lines, which are based on the types of surplus facilities facing D&D: Reactor Facilities, Radionuclide Separations Facilities, Fuel and Weapons Component Fabrication Facilities, and Laboratory Facilities.

The DDFA supports a broad, balanced portfolio of activities ranging from basic science to full-scale demonstration and deployment assistance. Throughout the FY2000 to FY2004 period, DDFA plans to continue implementing its LSDDP strategy to address near-term needs through the full-scale demonstration of improved and innovative technologies. This [LSDDP] approach helps reduce the risk and liability for the DOE users associated with the first time use of a technology and promotes creative solutions that expand the D&D "tool box" beyond standard practices and technologies. These projects are managed by using an Integrating Contractor Team consisting of the site D&D contractor and several commercial D&D contractors who are willing and able to transfer the knowledge and expertise to other sites across the DOE Complex. The U.S. Army Corps of Engineers (USACE) conducts independent cost and performance analysis of the demonstrated technologies versus the baseline technologies, and documents these results in the Innovative Technology Summary Reports. Through these reports, technical performance and costs are effectively communicated to end-user decision makers and problems holders throughout the complex, thus facilitating replacement of baseline technologies with deployment of more cost-effective alternatives. The LSDDP strategy, coupled with the leveraged ASTD projects will serve to accelerate deployments and to meet near-term, high-priority needs.

In addition to the LSDDPs and ASTD projects, including: Robotics (RBX); Characterization, Monitoring, and Sensor Technologies (CMST); Efficient Separations and Processing (ESP); Industry and University Programs; Basic science research grants are EM Science Program (EMSP).

Strategically, the DDFA plans to gradually transition its *investment portfolio* from its current near-term emphasis on technology demonstrations and deployments to technology development aimed at solving post-2006 cleanup needs. These new activities will include applied R&D through engineering of production prototypes performed within the Crosscutting Programs, and will play off current basic research selected and funded within the EMSP. The proportion of the DDFA budget dedicated to basic science has increased substantially since FY1996 when the EMSP conducted its first D&D topical solicitation. With four D&D science grants awarded in FY1996, five more awarded in FY1997, and 13 new grants in FY1998, there are 22 three-year grants now in place. This basic science work is targeted to fundamental research aimed at gaining a better understanding of D&D problems and technologies, especially those D&D problems associated with post-2006 D&D projects. Breakthrough D&D technologies are likely to emerge from some of this work. The DDFA is currently evaluating the first four D&D science grants, which were completed in FY1999, to identify opportunities for follow-on work within the program.

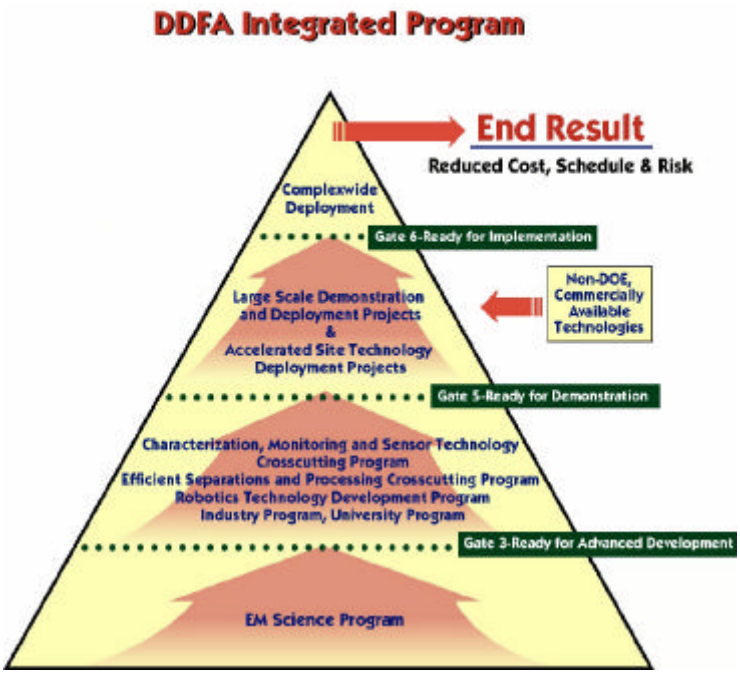


Figure 8. The DDFA's Integrated Approach to Technology Development and Deployment

All of this work is fully integrated within the DDFA. The "technology pyramid" depicted in Figure 8 is intended to illustrate the DDFA's focus area-centered program. Within the fully integrated DDFA program, a balanced portfolio of science and technology activities is planned for the FY2000-2004 period.

5. RELATIONSHIP TO OTHER PROGRAMS

As shown in Figure 9, the DDFA is an integrated program based on the focus area-centered approach, which capitalizes on the multi-disciplinary expertise within OST Crosscut Programs (CMST; ESP; RBX; Industry/University Programs; and the EMSP) to develop solutions addressing high-priority D&D needs identified by EM's end-user organizations. The DDFA program also includes *technology enhancing* activities to ensure the successful deployment of alternative technologies. These enhancing activities include: human factors assessments by the International Union of Operating Engineers/National HazMat Program; technology cost and performance assessment by FIU-HCET; streamlined access to international technology advancements & markets through an International Agreement with AEA Technology; and comprehensive cost analysis of demonstrated technologies by the USACE. In aggregate, these enhancing activities, coupled with the development and demonstration of improved technologies, form a pathway that affords every opportunity for technology developers and D&D service providers to positively impact the DOE marketplace.

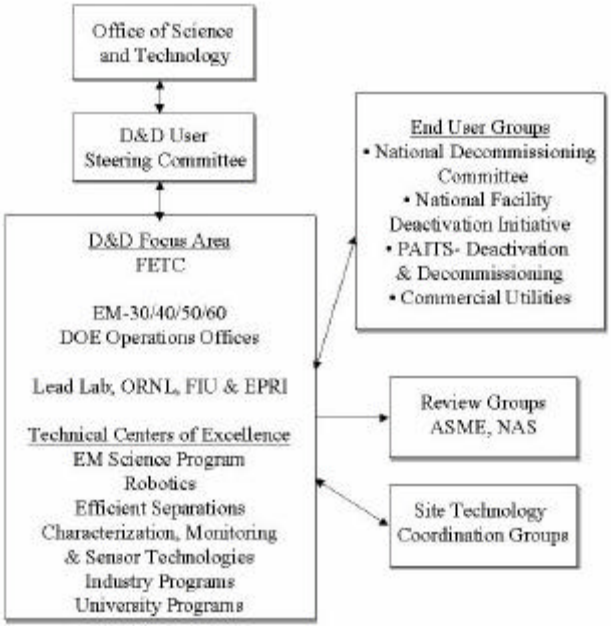


Figure 9. DDFA Organizational Structure

The DDFA remains attentive to DOE sites needs, via the Site Technology Coordination Groups and other user groups (e.g., National Decommissioning Committee, NFDI Committee, commercial nuclear utilities, etc), and routinely provides for review of the program to ensure its integrity. Internal review is performed by the EM end users during the DDFA Mid-Year Review. External review is performed by various groups, including ASME and NAS.

The DDFA is fully involved in the EMSP in order to advance the RD&D activities focused on post-2006 D&D projects. Through cooperation with the EMSP, the DDFA seeks to "bridge the gap" between broad fundamental research that has wide-ranging applicability such as that performed in DOE's Office of Energy Research and the National Science Foundation, and need-driven applied technology development that is conducted for DDFA through the Crosscut Programs.

In addition to conducting advanced and engineering development R&D, the FIU-HCET provides technical assistance through its Technology Assessment Program (TAP). The TAP is designed to evaluate baseline and innovative D&D technologies under standard test conditions such that detailed and comparable data is collected on cost and performance prior to consideration for full-scale demonstration within the LSDDPs. To date, FIU-HCET has performed over 60 technology asessments of baseline and innovative D&D at its testing facility in Miami, Florida. TAP information is located on the internet at http://www.hcet.fiu.edu/tap/. As a key member of all DDFA's LSDDP Integrated Contractor Teams, FIU-HCET also provides detailed evaluation data for all technologies screened for possible demonstration within the LSDDPs. Currently the LSDDP Technology Information System (LSDDP-TIS) contains information on over 575 screened technologies. LSDDP-TIS information can be found at http://www.dandd.org/lsddp-tis/.

The DDFA has also engaged the U.S. Army Corps of Engineers (USACE) to provide comprehensive cost benefit analysis of improved and innovative technologies demonstrated at full-scale within the LSDDPs. The USACE brings its expertise in engineering cost estimating and analysis to each LSDDP to ensure a consistent level of appraisal, as part of an interagency agreement with the DOE at FETC. The USACE performs independent cost-benefit analysis and validates performance results for each demonstrated technology; this information is summarized in section 5 of the Innovative Technology Summary Reports ("Green Books"). The DDFA assigned this cost benefit task to the USACE based on the fact that the Federal Remediation Round Table has designated the USACE as its center for cost analysis.

In December 1997, DOE/DDFA partnered with several commercial nuclear utilities and the D&D technical community (EPRI; ANL; FIU- HCET). The MOU provides a mechanism for leveraging resources through joint development and deployment of new D&D technologies. In early 1998, the MOU Consortium established a charter and began identifying technical areas of common interest. DOE and EPRI are collaborating to conduct quarterly workshops at various locations around the country, each focusing on a particular decommissioning area. Topics covered to date include: concrete decontamination, imbedded pipe decontamination, and site characterization. Since signing the original MOU, the Consortium has expanded to 13 members including seven utilities. The first joint demonstration is scheduled for September through November 1999 at Big Rock Point Nuclear Plant in Charlevoix, Michigan. This demonstration will evaluate an advanced pipe decontamination system developed by FIU. Members of the MOU Consortium also provide outside peer review to the DDFA technology development activities.

In summary, the DDFA is a comprehensive RD&D program aimed at delivering more effective and less costly technologies and systems to D&D problem holders throughout the DOE weapons complex-- and beyond.

6. TECHNICAL PROGRAM

The DDFA strategy is to quickly access and demonstrate/validate the many commercially available D&D technologies worldwide, which are not currently being used within the DOE Weapons Complex. The DDFA plans to continue its near-term LSDDP strategy through the FY2000-2004 period (Figure 10). In the first three LSDDPs (FY1996-1998), the DDFA emphasized reactor (both research and production) facilities and uranium processing facilities. In the current four LSDDPs (FY1998-2001), the emphasis is on fabrication facilities contaminated with tritium and transuranics (including plutonium contaminated gloveboxes), highly-enriched uranium (HEU) fuel component fabrication facilities, and fuel storage pools and underwater D&D operations. During the FY2000-2004 period, the following types of facilities and D&D problems will be emphasized:

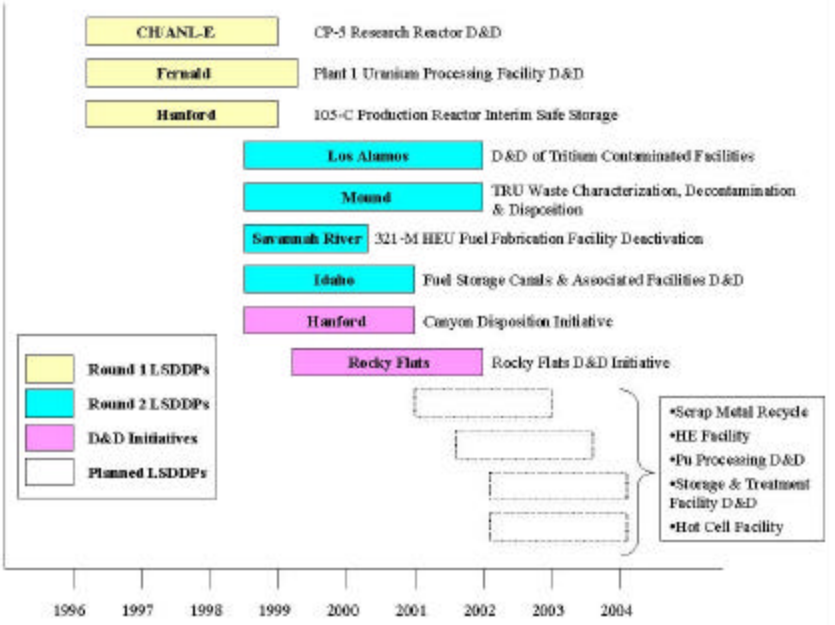


Figure 10. Schedule of Major Site D&D Problems to be Addressed by DDFA

Plutonium Reprocessing Facilities (Deactivation)
Emphasis will be on facility characterization, removal and stabilization of spent nuclear material (SNM) liquids, stabilization and consolidation of SNM, removal of SNM from inaccessible areas, decontamination and preparation for facility turnover for long-term S&M or decommissioning.
Applicable Sites: Canyon-type facilities at Hanford, Savannah River, and Idaho.

Scrap Metal Recycle
Emphasis will be on improved technologies for rapid radioactive analysis, separation and processing of contaminated scrap metal and debris. Significant life-cycle cost savings are expected through disposal costs avoidance by recycling and reusing the rad fraction (e.g., waste containers and shielding), and through decontamination for release.
Applicable Sites: DOE's five major sites; OR (including Paducah & Portsmouth), INEEL, Rocky Flats, Savannah River and Hanford.

Storage and Treatment Facility Monitoring and Maintenance

Emphasis on remote, automated systems for improved characterization and monitoring of storage and treatment facilities and their equipment, to reduce the risk to workers and the risk of an environmental release. Improved robotic systems will also be developed, demonstrated and deployed that will increase equipment decontamination productivity, reduce waste, and to handle waste prior to transfer to permanent waste storage facilities.

Applicable Sites: The waste vitrification facility at West Valley, the Defense Waste Processing Facility (DWPF) at Savannah River, Hanford's Waste Encapsulation Storage Facility (WESF), and the Waste Calcining Facility at Idaho.

Hot Cells (Deactivation and Decommissioning)

Emphasis will be on remote characterization, decontamination of high radiation equipment and structures and remote dismantlement in limited access areas.

Applicable Sites: Hot cells are found throughout the DOE Complex.

D&D of Facilities Contaminated with High Explosives

Emphasis on improved HE survey techniques, liquids and solvent treatment, and equipment/facility decontamination.

Applicable Sites: Pantex, and non-EM/DOE ordnance facilities throughout the U.S.

In addition to LSDDPs, the DDFA initiated the CDI at Hanford in March 1998. This CERCLA RI/FS process is working toward establishing a ROD for the ultimate disposition of U-Plant chemical reprocessing canyon. One potential option is to remove all transuranic contaminants, fill the structure with low level waste, and entomb the canyon as a permanent LLW disposal facility. This potential option could reduce the canyons D&D mortgage at Hanford by more than $1 billion, and is applicable to similar chemical reprocessing facilities at Savannah River, Oak Ridge and INEEL.

A second new DDFA program initiated in January 1999 is the RFI. This project is critical to Rocky Flats being able to develop and implement a technical baseline for closure in FY2006 by enabling simultaneous D&D of up to three of the Plutonium laboratory buildings in the FY2001-2006 period, rather than sequentially. This milestone will be accomplished through implementation of a central size reduction facility currently under design. The central size reduction facility will be comprised of a building containment system, a size reduction and material handling system, and an assaying system. This work is closely coordinated with two Rocky Flats ASTD projects. The first ASTD supported rapid deployment of a commercially available characterization system, and improved cutting and size reduction tools. The second ASTD supports an interim size reduction system comprised of a remotely operated robotic arm with tooling and a Permacon enclosure.

In addition to the two Rocky flats ASTDs, the DDFA also manages 1o other ASTD projects. The ASTD program provides an incentive to the DOE sites, through cost sharing, to actually deploy improved technologies. These ASTD projects include:

- Decontamination and Volume Reduction System at LANL
- INEEL/FEMP Integrated D&D
- Deployment of Highly Selective Nuclide Removal System; Savannah River
- Deployment of the Mobile Work Platform; Fernald
- Remote Work Platform for Size Reduction of B Cell; Hanford
- Oversize TRU Waste Laser Cutting; NTS

- Reuse of Concrete for Recycle from Decontamination and Decommissioning Projects; INEEL
- Providing the Personal Ice Cooling System; Fernald
- Deployment of Innovative Characterization Technologies and Implementation of the MARSSIM Process at Radioactively Contaminated Sites; EML/BNL
- Position-Sensitive Radiation Monitoring System for Surveying Floors in Industrial Areas; NTS

Clearly, the ultimate measure of success for OST, as well as the DDFA, is the widespread deployment across the DOE complex of improved and innovative technologies. Never-the-less, the DDFA recognizes the need to address long-term D&D problems. Thus, the DDFA also supports technology RD&D that will lead to reductions in the out-year (post-FY2006) D&D costs, acceleration of D&D schedules thereby reducing long-term S&M costs, and/or provide a capability (enabling) which does not currently exist. Currently, DDFA supports 22 basic science grants managed by the EMSP. As these projects come to a close, DDFA will review their progress to determine the most efficient means of transitioning these projects into applied research. During the FY2000-2004 time frame, a greater portion of the focus areas budget will be directed toward meeting long-term D&D needs. This change in emphasis will be implemented through close coordination with the Lead Laboratory in cooperation with the EMSP and Crosscut Programs.

6.1 Technical Program Summary

The product line budget for FY2000 through FY2004 is shown below in Table 2. Product line activities for the five-year period FY2000-FY2004 are describe in separate paragraphs below.

Table 2. DDFA Total Program Budget by Product Line, FY2000 - FY2004 ($ in millions)

Product Line	*FY2000*	*FY2001*	*FY2002*	*FY2003*	*FY2004*	*5-Year Total*
Reactor Facilities	6.1	4.3	5.5	5.5	5.5	**26.9**
Radionuclide Separation Facilities	10.4	10.8	10.5	10.5	10.5	**52.7**
Fuel & Weapon Components Fabrication Facilities	9.0	8.9	11.0	11.0	11.0	**50.9**
Laboratory Facilities	0.0	0.0	4.5	4.5	4.5	**13.5**
Totals	**25.5**	**23.9**	**31.5**	**31.5**	**31.5**	**143.9**

Reactor Facilities Product Line

There are 14 surplus production reactors within the DOE weapons complex--nine at Hanford and five at Savannah River--which represent a significant portion of EM's long-term D&D mortgage. There also exist over 100 test and research reactors throughout DOE (INEEL has more than 50) and U.S. universities that will require D&D. More than half have already been placed in shutdown mode. In addition to these DOE and university reactors, the U.S. commercial nuclear power companies have 109 nuclear reactors. Many of these reactors are approaching their life expectancy and will require D&D. Improved and innovative technologies are required to facilitate D&D of these reactors to a degree such that they can be put in interim safe storage for a long period of time (up to 50 years) with minimal S&M requirements. Hanford has completed interim safe storage of the 105-C Reactor Facility and plans to complete two more, and possibly a third, by FY2006 (F, DR and N Reactors). In addition to the reactor cores and central reactor facility, this product line also addresses needs associated with highly contaminated fuel pools and their associated facilities. These facilities require improved technologies for characterization, decontamination and dismantlement of underwater structures and equipment.

FY2000 Proposed Work Description

- Review completed FY1999 EMSP grants for potential transfer to applied R&D within this product line, and assess new science needs for FY2000/2001 EMSP basic science solicitation.
- Initiate integration of characterization sensors for high-rad difficult to access areas.
- Demonstrate Integrated Vertical & Overhead Decontamination System.
- Demonstrate/deploy (non-DOE) Ex Situ Large Bore Pipe Decon & Characterization System.
- Develop and deploy a low-cost D&D system based on commercially available Brokk system and the compact remote operator console developed by ORNL.
- Complete deployment of innovative characterization technologies (i.e., ISOCS) as part of the MARSSIM implementation at BNL.
- Deploy two technologies (3-M Empore and Selion Graver Nuclide Removal System) for cleanup of Savannah River basin liquids.
- Complete Fuel Storage Pools & Associated Structures LSDDP with demonstration of four to six new and innovative D&D technologies.
- Assess unmet technical needs associated with Reactors, Fuel Pools & Associated Structures to determine R&D path forward beginning in FY2001.

FY2001 Proposed Work Description

- Review completed FY2000 EMSP grants for potential transfer to applied R&D within this product line, and assess new science needs for EMSP basic science solicitation.
- Complete integration of characterization sensors for high-rad difficult to access areas.
- Demonstrate Remote Surveillance of Facilities Awaiting D&D.
- Complete Savannah River basin liquid cleanup deployment and develop cost performance reports.
- Initiate applied and advanced/engineering development through IP/UP to address high-priority needs based on FY2000 assessment of unmet needs associated with Reactors, Fuel Storage Pools & Associated Structures.

FY2002 Proposed Work Description

- Review completed FY2001 EMSP grants for potential transfer to applied R&D within this product line, and assess new science needs for EMSP basic science solicitation.
- Demonstrate integrated characterization sensors for high-rad difficult to access areas.
- Continue applied and advanced/engineering development through IP/UP to address high-priority needs.

FY2003 Proposed Work Description

- Assess new science needs for EMSP basic science solicitation within this product line.
- Complete technologies developed through IP/UP to address high-priority needs.

FY2004 Proposed Work Description

- Review completed FY2003 EMSP grants for potential transfer to applied R&D within this product line, and assess new science needs for EMSP basic science solicitation.
- Demonstrate/deploy technologies developed through IP/UP to address high-priority needs associated with Reactors, Fuel Storage Pools & Associated Structures.

Radionuclide Separation Facilities Product Line

Separation process facilities are typically highly contaminated, aging structures and represent the largest portion of EM's surplus facility inventory. Improved, innovative technologies are required to deactivate and decommission radionuclide separation facilities, including gaseous diffusion plants, fuel reprocessing canyons and a wide variety of specific types of facilities (such as chemical separation, uranium recycling,

lithium enrichment, heavy water production and tritium production). The main focus of this product line is to reduce the risks and costs associated with the deactivation and decommissioning of these nuclear facilities and to lower long-term S&M costs.

Deactivation and decommissioning of surplus chemical and isotope separation facilities are expected to produce large quantities of potentially valuable materials, including concrete and contaminated metals. At present, most of these materials are disposed of as waste, as no cost-effective technologies exist to characterize and/or decontaminate them for free release. Decontamination of materials for recycle for free release will result in substantial D&D life-cycle costs savings. Technologies to characterize, separate (contaminated and non-contaminated portions), and decontaminate products for internal DOE recycle or free release will be demonstrated and deployed. Without this effort, most of the material generated during D&D will be disposed of as low-level waste resulting in high life-cycle cost. Recovery of these materials will allow the sites not only to avoid costly disposal costs, but will also provide the nation will valuable resources thereby reducing the necessity to manufacture products from virgin materials.

FY2000 Proposed Work Description

- Review completed FY1999 EMSP grants for potential transfer to applied R&D within this product line, and assess new science needs for FY2000/2001 EMSP basic science solicitation.
- Initiate technology evaluation for integration of multiple sensors for material characterization and segregation.
- Complete development of a high productivity vacuum blasting system.
- Evaluate and integrate a combination of detection instruments for real-time volumetric radioassay of lead forms.
- Assemble and integrate compact remote operator console with the equipment pit D&D system.
- Demonstrate Online Measurement of the Progress of Decontamination.
- Complete Life-Cycle Costs Analysis of Radioactive Scrap Metal Disposition.
- Develop computer control architecture required to support enhanced telerobotic control compatible with the compact remote operator console for equipment pit D&D, including integration of the Robotic Task Space Analyzer.
- Initiate demonstration of AEA technology to decontaminate contaminated equipment, including possibly canisters and other waste processing equipment associated with the SRS and WV waste vitrification.
- Complete Dual Point Impedance Control system development for enhanced telerobotic operations.
- Complete Canyon Disposition Initiative with the demonstration/deployment of two to four new and innovative characterization technologies.
- Deploy Position Sensitive Radiation Monitor (Surface Contamination Monitor) at NTS.
- Complete fabrication of Laser Cutting System for deployment at NTS TRU waste size reduction.
- Conduct INEEL implementation of innovative processes for Recycle and Release of Concrete from D&D projects.
- Deploy Personnel Ice Cooling System throughout DOE sites.
- Deploy Mobile Work Platform for D&D operations at Fernald.
- Assess unmet needs associated with Radionuclide Separation Processing Facilities to determine R&D path forward beginning in FY2001.

FY2001 Proposed Work Description

- Review completed FY2000 EMSP grants for potential transfer to applied R&D within this product line, and assess new science needs for EMSP science solicitation.
- Demonstrate/deploy high productivity vacuum blasting system.

- Complete integration of multiple sensors for material characterization and segregation.
- Complete integration of detection instruments for real-time volumetric radioassay of lead forms.
- Complete development and integration of the telerobotic control, including integration of the Robotic Task Space Analyzer and compact remote operator console for deployment of equipment pit D&D system based on a enhanced Schilling hydraulic manipulator.
- Deploy second application of the Position Sensitive Radiation Monitor (Surface Contamination Monitor) at NTS.
- Deploy Laser Cutting System for deployment at NTS TRU waste size reduction.
- Complete INEEL implementation of innovative processes for Recycle and Release of Concrete from D&D projects and document cost and performance.
- Initiate applied and advanced/engineering development through IP/UP to address high-priority needs based on FY2000 assessment of unmet needs associated with Radionuclide Separation Processing Facilities.
- Initiate one (maybe two) LSDDPs (e.g., Scrap Metal Recycle & Release or Processing Facility D&D).

FY2002 Proposed Work Description

- Review completed FY2001 EMSP grants for potential transfer to applied R&D within this product line, and assess new science needs for EMSP science solicitation.
- Demonstrate multiple sensor configuration for material characterization and segregation.
- Demonstrate detection instruments for real-time volumetric radioassay of lead forms.
- Continue applied and advanced/engineering development through IP/UP to address high-priority needs.
- If initiated in FY2001, continue implementation of LSDDP(s).
- Possible initiation of a second LSDDP.

FY2003 Proposed Work Description

- Assess new science needs for EMSP basic science solicitation within this product line.
- Complete technologies developed through IP/UP to address high-priority needs.
- Complete implementation of LSDDP(s) initiated in FY2001 and continue implementation of LSDDP(s) initiated in FY2002

FY2004 Proposed Work Description

- Review completed FY2003 EMSP grants for potential transfer to applied R&D within this product line, and assess new science needs for EMSP basic science solicitation.
- Demonstrate/deploy technologies developed through IP/UP to address high-priority needs based on assessment of unmet needs associated with Radionuclide Separation Processing Facilities.
- Complete implementation of LSDDP, if initiated in FY2002

Fuel and Weapon Components Fabrication Facilities Product Line

Fuel and weapon components fabrication facilities present the second largest group of surplus facilities facing D&D. These facilities incl fuel and target fabrication facilities, weapons component fabrication facilities and weapons assembly, dismantlement, modification and maintenance facilities. Weapons production activities within these facilities resulted in highly contaminated facilities that include hazardous wastes, contaminated solvents, heavy metals, high explosives and nuclear waste (especially plutonium and highly enriched uranium). Many of the operations associated with fuel and weapons components fabrication were conducted within gloveboxes. As such, numerous sites including Rocky Flats, LANL, Hanford and Savannah River have contaminated gloveboxes that must be dispositioned. Improved technologies for glovebox characterization, decontamination, size reduction, and waste handling and packaging will be invested within this product line.

FY2000 Proposed Work Description

- Review completed FY1999 EMSP grants for potential transfer to applied R&D within this product line, and assess new science needs for FY2000/2001 EMSP basic science solicitation.
- Complete development of the Alpha Continuous Emission Monitor
- Complete development of the Modular Manipulator for robotic applications in glove boxes.
- Demonstrate In Situ Pipe Decontamination System
- Initiate development of a real-time surface characterization system for beryllium for application at Rocky Flats.
- Initiate development of a beryllium air monitoring system for application at Rocky Flats.
- Deploy Remote/Robotic Size Reduction System for RFETS Building 776.
- Deploy Decontamination and Volume Reduction System at LANL
- Procure and begin fabrication of Central Size Reduction Facility at Rocky Flats
- Continue Mound LSDDP for D&D of Tritium Facilities demonstrating four to six technologies.
- Close out LSDDP for Deactivation of Savannah River's 321-M HEU Facility and prepare final project documentation.
- Assess unmet technical needs associated with Fuel and Weapon Components Fabrication Facilities to determine R&D path forward beginning in FY2001.

FY2001 Proposed Work Description

- Review completed FY2000 EMSP grants for potential transfer to applied R&D within this product line, and assess new science needs for EMSP basic science solicitation.
- Complete fabrication of Central Size Reduction Facility at Rocky Flats
- Complete Mound LSDDP for D&D of Tritium Facilities demonstrating four to six technologies.
- Complete LANL LSDDP with demonstration of four to six technologies.
- Initiate applied and advanced/engineering development through IP/UP to address high-priority needs based on FY2000 assessment of unmet needs associated with Fuel and Weapon Components Fabrication Facilities.

FY2002 Proposed Work Description

- Review completed FY2001 EMSP grants for potential transfer to applied R&D within this product line, and assess new science needs for EMSP basic science solicitation.
- Continue applied and advanced/engineering development through IP/UP to address high-priority needs.
- Possible initiation of an LSDDP (e.g., High Explosives Facility).

FY2003 Proposed Work Description

- Assess new science needs for EMSP basic science solicitation within this product line.
- Complete technologies developed through IP/UP to address high-priority needs.

FY2004 Proposed Work Description

- Review completed FY2003 EMSP grants for potential transfer to applied R&D within this product line, and assess new science needs for EMSP basic science solicitation.
- Demonstrate/deploy technologies developed through IP/UP to address high-priority needs based on assessment of unmet needs associated with Fuel and Weapon Components Fabrication Facilities.
- Complete implementation of LSDDP, if initiated in FY2002

Laboratory Facilities Product Line

The Laboratory Facilities product line includes those facilities that were involved in the research, development and testing (RD&T) of weapons production processes and of the RD&T of the weapons and

weapons components themselves. Many of these facilities have highly contaminated hot cells and gloveboxes. In addition, unlike the massive weapons production facilities, many of these facilities are small and require improved technologies capable of operating in confined or limited access areas.

Beginning in FY2000, DDFA will shift scope previously associated with Radionuclide Separation Facilities product line to the Laboratory Facilities product line to address technical needs associated with DOE's storage and treatment facilities. This shift is due, in part, to the many contaminated hot cells associated with these facilities and in an attempt to provide a more balanced program. Facilities identified within this scope include the waste vitrification facility at West Valley, the Defense Waste Processing Facility (DWPF) at Savannah River, Hanford's Waste Encapsulation Storage Facility (WESF), and the Waste Calcining Facility at Idaho. The majority of these facilities still serve an active mission for DOE and have yet to develop baseline life-cycle costs and schedules for their ultimate D&D. None the less, the sites have begun to identify near-term and long-term D&D technical challenges. As DDFA shifts from its near-term LSDDP strategy to a longer-term R&D strategy, a greater emphasis will be place on these facilities and their associated technical needs.

FY2000 Proposed Work Description

- Review completed FY1999 EMSP grants for potential transfer to applied R&D within this product line beginning in FY2002, and assess new science needs for FY2000/2001 EMSP basic science solicitation.
- No research, development or demonstration in this product line in FY2000.
- Assess unmet technical needs associated with Laboratory Facilities to determine R&D path forward beginning in FY2002.

FY2001 Proposed Work Description

- Review completed FY2000 EMSP grants for potential transfer to applied R&D within this product line beginning in FY2002, and assess new science needs for EMSP basic science solicitation.
- No research, development or demonstration in this product line in FY2000.
- Deploy (FY99 ASTD) Remote Work Platform for Size Reduction of B Cell at Hanford
- Assess unmet technical needs associated with Laboratory Facilities to determine R&D path forward beginning in FY2002.

FY2002 Proposed Work Description

- Review completed FY2001 EMSP grants for potential transfer to applied R&D within this product line, and assess new science needs for EMSP basic science solicitation.
- Initiate applied and advanced/engineering development through IP/UP to address high-priority needs based on FY2000/FY2001 assessment of unmet technical needs associated with Laboratory Facilities.
- Possible initiation of LSDDP (e.g., Hot Cell and Associated Laboratory Equipment D&D or Storage and Treatment Facility D&D).

FY2003 Proposed Work Description

- Assess new science needs for EMSP basic science solicitation within this product line.
- Continue applied and advanced/engineering development through IP/UP to address high-priority needs.
- Continue implementation of LSDDP if initiated in FY2002, or initiate LSDDP

FY2004 Proposed Work Description

- Review completed FY2003 EMSP grants for potential transfer to applied R&D within this product line, and assess new science needs for EMSP basic science solicitation.

- Complete applied and advanced/engineering development through IP/UP to address high-priority needs based on assessment of unmet technical needs associated with Laboratory Facilities.
- Complete implementation of LSDDP if initiated in FY2002, or continue LSDDP if initiated in FY2003.

6.2 Work Packages

The following section provides descriptions of all the active and future planned work packages supported by the DDFA. These work packages are presented in priority order based on the FY2001 Corporate Review Budget (CRB) process conducted in the spring of FY1999. Not all work packages are funded at this time nor, based on the CRB, is funding expected until FY2002, at the earliest.

Work Package DD08: D&D of Processing Facilities

Separation process facilities are typically massive in size, are aging structures, and have high levels of contamination. These facilities represent the greatest number of facilities facing D&D in the DOE weapons complex and include chemical separations and enrichment operations designed primarily to produce plutonium and uranium. The cost and risk of baseline approaches is staggering. Many of these facilities are not even included in the ACPtC Plan, because there is no way to cost-effectively perform the D&D. Current green-field end states are not feasible or affordable. Removal and disposition of radioactive and hazardous materials and equipment, deactivation of non-essential systems and utilities, and reconfiguration of systems to facilitate long-term S&M within these facilities with baseline technologies is very costly and poses high safety and health risks. Technologies will be demonstrated and deployed which address characterization of specific contaminants, large-scale decontamination and dismantlement, waste disposition, worker health and safety, and remote operations. Affordable end states will also be developed with regulator and stakeholder participation. Specific application sites are located at Idaho, Hanford, Oak Ridge and Savannah River.

Work Package DD02: Fuel Storage Pools and Associated Structures D&D

The main focus of this work package is the decontamination and dismantlement of surplus facilities and structures, including fuel storage pools, associated with DOE's test and research reactors (complex-wide) and production reactors (Hanford and Savannah River), and to return potentially occupiable sites to a releasable state for reuse by other programs or the public consistent with guidance provided in DOE Order 5400.5. DOE's highly contaminated fuel pools and associated facilities require improved technologies for characterization, decontamination, dismantlement, and waste disposal. Technologies will be demonstrated and deployed which address underwater visual inspection, characterization and dismantlement as well as treatment and disposal of fuel pool sludge, debris and water. These improved/innovative technologies will accelerate schedules, reduce worker risk, significantly reduce the cost of decontamination and dismantlement of such facilities, and eliminate or reduce S&M requirements by maintaining surplus facilities in a safe condition thereby meeting the requirements found in CRF41-101.47.400.

Though the current effort (FY1999 through FY2001) focuses on improved technologies for D&D of surplus fuel pool facilities such as those at INEEL's Test Area North (TAN) and Test Reactor Area (TRA), this work package will also benefit other projects such as the monitoring and deactivation efforts associated with Savannah River's Receiving Basin for Offsite Fuels (RBOF). Also, albeit Hanford's K-Basin needs were transferred from DDFA to the Nuclear Materials Focus Area in FY1999, this work package will substantially assist the future deactivation of the K-Basin by developing, demonstrating, and deploying improved characterization, decontamination, size reduction, and treatment technologies

applicable to the technological needs associated with this facility. Finally, this work package will also assist the commercial nuclear utility industry, which also faces deactivation and decommissioning of similar complex facilities. For this reason, the commercial nuclear utility industry will be a key participant and directly involved in this effort. Without these technologies, DOE sites and private industry will be forced to adhere to their original technical baselines which will increase the cost, increase worker risk, and take longer to complete D&D of these facilities.

Work Package DD05: Material Recycle and Release

Technologies to characterize, separate (contaminated and non-contaminated portions) and decontaminate metal, concrete, and other high-valued materials for internal DOE recycle or free release will be demonstrated and deployed. This will result in substantial life-cycle cost savings. Without this effort, most of the materials generated during deactivation and decommissioning will be disposed of as low-level waste at typically high life-cycle cost. Technologies demonstrated and deployed within this work package have wide application across the DOE complex, but will focus primarily on the near-term recycle and release needs of the five major DOE sites: Oak Ridge including Portsmouth and Paducah, Rocky Flats, Hanford, Idaho and Savannah River.

Work Package DD01: D&D of Tritium Contaminated Facilities

Facilities at DOE's Mound and Savannah River sites have many structures which contain tritium contamination. Tritium poses a unique challenge to D&D because of its high mobility and ability to volumetrically contaminate metal and concrete. Improved and innovative technologies will be demonstrated and deployed to address building decontamination and dismantlement and metal/concrete waste disposal/recycling. Without these technologies, DOE sites will be forced to adhere to original technical baseline that will increase the risk to workers and increase the cost of deactivation and decommissioning. These improved technologies are expected to reduce D&D unit costs by 25 percent as well as substantially shorten D&D schedules. Specific application sites are Mound, Savannah River, Los Alamos National Laboratory, and to a lesser extent, Brookhaven National Laboratory.

Work Package DD12: D&D of Weapons Components Fabrication Facilities

Weapons components fabrication facilities include target fabrication facilities, weapons components fabrication and weapons assembly, dismantlement modification and maintenance facilities. These facilities represent some of DOE's most contaminated facilities; including facilities that contain highly fissile materials, and many facilities contaminated with numerous radioactive species, organics and high explosive (HE) materials. Many of these contaminants are extremely mobile, and if left unchecked pose a risk to the environment and surrounding communities. Due to the nature of many of these contaminants the cost of conducting S&M, and Material Control and Accountability are exorbitant. Improved, innovative technologies will be demonstrated and deployed which address the cost effective characterization, decontamination and dismantlement of such facilities and their contents including thousands of plutonium contaminated gloveboxes and miles of contaminated piping and duct systems. The work package address problems at nearly every DOE site, but the primary focus is on problems associated with Rocky Flats, Hanford, Savannah River and Los Alamos. Technical challenges associated with high explosives (e.g., those at Pantex) will be addressed by a new work package beginning in FY2002, if funding is available.

Work Package DD07: Hot Cell Facilities and Laboratory Equipment D&D

Laboratory facilities including hot cells and gloveboxes are found throughout the DOE complex. These facilities are typically contaminated with high levels of radioactivity and often require remote/robotic applications to reduce worker exposure risk. In addition, working space is often confined, which also results in increased worker exposure. Robotic technologies for characterization, decontamination,

dismantlement and waste packaging will be developed, demonstrated and deployed. Without this effort, baseline deactivation and decommissioning approaches will be followed at most all DOE sites at typically very high cost and risk to workers. The opportunity for broad and repeated deployment of such improved technologies is great, given the large number of similar facilities in the DOE weapons complex. Specific application sites include Savannah River, INEEL, Sandia National Laboratory, and General Atomics Hot Cell Facility (San Diego, California), General Electric (Vallecitos, California), and the Laboratory for Energy-related Health Research.

Work Package DD14: Storage and Treatment Facility D&D

DOE operates a number of waste treatment and temporary storage facilities across the complex. Until such time that these wastes can be adequately treated and disposed of, there exists a need to monitor the wastes and maintain the facilities in safe operating conditions. At Hanford's Waste Encapsulation and Storage Facility (WESF) there exist 1,928 double-wall corrosion-resistant metal capsules that contain 75 million Curies as either cesium chloride or strontium fluoride from fuel processing waste. The capsules, stored underwater in five separate pool cells, represent the single largest concentration of radioactive material in the U.S. Current plans are to continue underwater storage until about 2015, at which time the capsules will be turned over to the High Level Waste Disposal Program. Once the capsules are removed, WESF will undergo D&D. In the interim, WESF contains a series of highly radioactive hot cells that must be maintained for continued operations. Many of the hot cell windows are failing due to aging and radiation exposure. The hot cells are exhausted through a common duct that exits the facility beneath the hot cells, is HEPA filtered, and then exhausted to the atmosphere. This duct is contaminated with cesium (Cs) and strontium (Sr) (holding up to 60,000 curies of material). Technologies are needed which are capable of removing all the contamination from the ducts. The ultimate goal is to decontaminate this ducting to the level where the ventilation air flow can be secured without risk of contamination spread.

This work package will address the needs of WESF and other DOE storage and treatment facilities, including those the SRS Defense Waste Processing Facility (DWPF), the vitrification facility at West Valley, and the Waste Calcining Facility at Idaho. Improved technologies for characterization, size reduction and decontamination of materials and equipment, as well as methods to decontaminate vitrification canisters prior to shipment to a permanent disposal facility will be demonstrated and deployed. The primary focus of this work package will be to develop remote, automated systems to improve productivity, reduce waste, and reduce worker risk at these facilities in the areas of characterization, monitoring, decontamination and waste handling.

Work Package DD10: D&D of Reactors

This work package will address innovative and improved technologies for characterization, decontamination and dismantlement which will result in lower overall cost to D&D DOE's aging production reactor facilities, as well as lower the risk to workers involved in the D&D operations. Where opportunities present themselves, improved technologies and systems will be developed and deployed, which facilitate interim safe storage of DOE's production reactors such that long-term S&M requirements are minimized. Additionally, this work package will demonstrate technologies that will benefit the over 100 U.S. test/research reactors, when the opportunity exists to immediately transfer and deploy the technology for D&D of one of the full-scale production reactors. The field development of improved technologies and systems will be implemented by EM's Crosscutting Programs and through industry and university participation through FETC's Industry/University Programs. A key contributor to the R&D conducted in this work package will be EPRI and the commercial nuclear utilities. Through DOE's MOU with EPRI and the commercial nuclear utilities, problems common to both DOE and the private sector will addressed.

Work Package DD11: Deactivation of 321-M Fuel Fabrication Facility

The 321-M facility was used to manufacture fuel and target assemblies for irradiation in the Savannah River Site's production reactors. This facility is currently in post-shutdown S&M. An estimated 1,200 grams of highly enriched uranium is in the ventilation ducts, the processing systems and on open surfaces. Improved/innovative technologies will be demonstrated and deployed to remove residual highly enriched uranium (HEU) that will permit DOE to complete stabilization of the facility and will reduce ongoing S&M costs, and Material Control and Accountability requirements. This work package will be completed in early FY2000.

Work Package DD03: Canyon Disposition Initiative

The U-Plant canyon at Richland is one of nine canyon facilities in the DOE Complex. The canyon has a mix of processing cells that have been inactive for a long time. Remotely deployed characterization technologies will be demonstrated and deployed to accurately determine the type, quantity and location of contamination to support development of a ROD that will determine the final end-state of the U-plant facility. Without this project, DOE will not have the characterization data needed to complete the CERCLA RI/FS study for the U-plant to determine the most cost effective end-state for the facility.

Work Package DD15: D&D of Facilities Contaminated with High Explosives

This new work package will address problems associated with HE contaminated facilities . DOE has numerous facilities that support weapons assemble/disassemble including weapons inspection and quality testing, inert staging and storage, HE machining operations. As with many of DOE's surplus facilities, these facilities are failing structurally and pose a significant risk to workers, as well as risk to the environment in terms of potential contaminant release. These facilities contain residues from explosive machining throughout filter systems and large amounts of contaminated equipment. Initial characterization studies show additionally that these facilities contain lead paint, asbestos-containing material, and RCRA waste including solvents and potential radiounuclide contamination. This work package will address problems targeted at reducing costs associated with S&M, decontamination and demolition, and waste management. This work package will support D&D of HE facilities for both DOE and the Department of Defense nationwide. The Pantex Plant alone has identified 171 surplus process-contaminated facilities that will be addressed by activities supported under this work package.

6.3 Multiyear Funding Tables

Table 3 provides planned funding for all ongoing and future work packages supported by DDFA. Appendix B provides the Project Baseline Summaries and site needs for each work package, as well as information on the disposition of D&D site needs and potential and planned deployments of D&D technologies. Specific milestones and performance metrics for DDFA work packages are presented in Appendices D and E, respectively.

Table 3. DDFA Multiyear Program Budget by Work Package, FY2000 - FY2004 ($ in millions)

WP#	Work Package/Product Line	FY2000	FY2001	FY2002	FY2003	FY2004	5-year Total
DD02	Fuel Storage Pools and Associated Structures D&D	6.1	4.3	2.5	2.0	1.5	16.4
DD10	D&D of Reactors	0.0	0.0	3.0	3.5	4.0	10.5
PL1 Reactor Facilities		**6.1**	**4.3**	**5.5**	**5.5**	**5.5**	**26.9**
DD03	Canyon Disposition Initiative	0.8	0.0	0.0	0.0	0.0	0.8
DD08	D&D of Processing Facilities	4.3	6.0	5.5	5.5	6.5	27.8
DD05	Material Recycle and Release	5.3	4.8	5.0	5.0	4.0	24.1
PL2 Radionuclide Separation Facilities		**10.4**	**10.8**	**10.5**	**10.5**	**10.5**	**52.7**
DD01	D&D of Tritium Contaminated Facilities	3.0	2.9	0.0	0.0	0.0	5.9
DD11	Deactivation of 321-M Fuel Fabrication Facility	0.1	0.0	0.0	0.0	0.0	0.1
DD12	D&D of Weapons Components Fabrication Facilities	5.9	6.0	10.0	9.0	8.5	39.4
DD15	D&D of Facilities Contaminated with High Explosives	0.0	0.0	1.0	2.0	2.5	5.5
PL3 Fuel & Weapon Components Fabrication Facilities		**9.0**	**8.9**	**11.0**	**11.0**	**11.0**	**50.9**
DD07	Hot Cell Facilities and Laboratory Equipment D&D	0.0	0.0	3.5	3.0	2.0	8.5
DD14	Storage and Treatment Facility D&D	0.0	0.0	1.0	1.5	2.5	5.0
PL4 Laboratory Facilities		**0.0**	**0.0**	**4.5**	**4.5**	**4.5**	**13.5**
	D&D Focus Area Total	**25.5**	**23.9**	**31.5**	**31.5**	**31.5**	**143.9**
	EMSP Subtotal, incl. in DDFA Total	4.3	5.0	5.0	5.0	5.0	24.3

APPENDIX A: DDFA KEY PERSONNEL/ORGANIZATION

Since its inception in FY 95, the DDFA has strived to include all of its stakeholders (developers, users, vendors, public interest groups, etc.) in its decision-making process. The following list of key individuals comprise key stakeholders involved in the DDFA decision-making process.

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APPENDIX B. STCG NEEDS/MULTIYEAR RESPONSE TABLES

Appendix B, as presented, has been provided in lieu of the Multiyear Program Plan guidance, which requested a table showing the relationship between the STCG Need, Project Baseline Summary, Technology, and DDFA Work Packages. Due to the many-to-many relationships found in the ACPtC data, the following tables should provide a clearer representation of the data requested. Appendix B includes the following tables/data:

Table B.1 - *Needs and Problem Area Categories* lists all DDFA Needs (158) as well as Non-DDFA Needs (22) being tracked by the Focus Area. In addition, this table provides the Site's priority of the Need and a problem area categorization of the Need as reflected in Figure 4 of the Multiyear Program Plan.

Table B.2 - *Disposition of DDFA FY1999 Needs* provides detailed information on projects and technologies addressing the 158 DDFA Needs submitted by the Sites in FY1999. The column in this table "in IPABS Needs Tab" refers to technologies listed in the following table (Table B.3) and previously provided to the Sites as potential solutions to solve (completely or partially) their Needs.
The decision hierarchy used to determine disposition status of the Needs is as follows:

- **D** - A technology or technologies has been listed in IPABS with a "D" meaning commitment to deploy.
- **ASTD** - An ASTD project is being funded to deploy a technology(s) to meet Need. Also included in this category are Needs for which a technology has already been deployed to meet the Need, but the deployment is not listed in IPABS with a "D" (e.g., Idaho Needs met by RUCS TMS# 2151).
- **P** - A technology or technologies has been listed in IPABS with a "P" meaning potential to deploy.
- **Portfolio** - A technology(s) have been suggested by the DDFA in IPABS as having potential to satisfy need. See Table B.3 for potential technology solutions provided to sites.
- **RD&D** - Ongoing (funded) efforts by DDFA to satisfy need.
- **Gaps** - All needs that were not addressed by one of the previous disposition status categories.

Table B.3 - *Potential Solutions Provided to Sites by DDFA in IPABS* provides the list of DDFA technologies offered as potential solutions (partial or complete) to Site needs. This data was pre-screened by the site end-users prior to entry into the IPABS system on January 15, 1999.

Table B.4 - *IPABS Listed Deployments* provides deployment information (D = deployment commitment; P = deployment potential) as provided by the Sites in the Project Baseline Summaries found in the IPABS information system. Please note that technology deployments listed in the IPABS are not tied to Needs directly. The needs identified in this table have been inferred by the DDFA based on knowledge of the technology and the Need/PBS relationships.

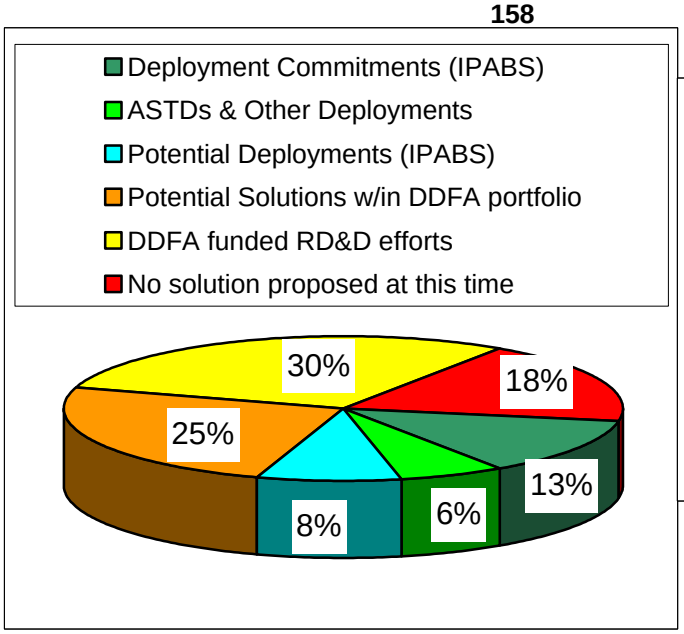
Table B.5 - *DDFA Work Packages* provides the relationship of STCG Needs and PBSs to the Focus Area's Work Packages as presented in the Multiyear Program Plan, Section 6.2.

Table B.1 Needs and Problem Area Categories

Site Need ID	Need Title	Priority	Science	Characterize	Decon M	Decon C	Demol/SR	MD/Recycle	H&S	Other	Remote/robo	Comment
AL-07-01-12-DD	New Technologies to Decontaminate and Decommission Radioactively Contaminated Facilites	2	N		X	X						too broad
AL-07-01-11-MW	Waste Sorting and Characterization	3	N	X				X				segregate
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination	2	N		X							
AL-07-01-14-MW	Appropriate Characterization of TRU Waste Now Stored in Fiberglass Reinforced Plywood Boxes for WIPP	2	N	X								
AL-07-06-01-DD	Decontamination and Decommissioning (D&D) Technology Development	2	N	X	X	X						too broad
AL-08-01-17-MW	Certifiability of Newly Generated TRU Waste	3	N	X				X				
AL-08-06-02-DD	Decontamination of Concrete Surfaces Contaminated w/Radionuclides & High Explosive Materials Using Microbially Influence Degradation	2	N			X						too specific
AL-09-01-02-DD-S	Radiological Air Monitoring Needs for Current D&D/ER Operations	1	Y						X			
AL-09-01-04-DD-S	Methodology for Effective D&D of Large Environmental Sites	1	Y		X	X						
AL-09-01-13-DD	On-Site Quantitation of Plutonium and Americium in Soil and Concrete Rubble from D&D Projects	2	N	X				**X**				segregate
AL-09-01-14-DD	Quantitation of Tritium in Concrete Rubble from D&D Projects	2	N	X				**X**				segregate
AL-09-01-15-DD	Disposal & Recycle Technologies for Scrap Uranium Chips and Turnings	2	N					X				waste min
AL-09-01-11-MW	Characterization of Equipment Potentially Contaminated with Alpha Emitting Transuranic (TRU) Radionuclides	3	N	**X**				X				
AL-09-01-12-MW	Decontamination and Volume Reduction of TRU and LLW Metals	1	N		X		X	X				waste min
CH-DD01-99	Characterization for D&D of the Brookhaven Graphite Research Reactor	3	N	X								
CH-DD02-99	Decontamination of Exterior Fixed Surface Contamination of the 310 Retention Tanks	2	N		X							
CH-DD03-99	Metal Decontamination (tank internals)	3	N		X							
CH-DD04-99	Improved Worker Protection Equipment	2	N						X			
CH-DD05-99	Size Reduction of Large Concrete Structures	2	N				X					concrete
CH-DD06-99	Size Reduction of Massive Metal Structures	2	N				X					metal
CH-DD07-99	Decontamination of Fixed Surface Contamination of Concrete (thin layer removal)	2	N			X						
CH-DD08-99	Remote Decontamination of In-ground Concrete Structures	2	N			X					X	
CH-DD09-99	Tritium Removal by Laser Heating	2	N		X							tritium
CH-DD10-99	Improved Waste Packaging for Remote Handled Waste	2	N					X			X	packaging
CH-DD11-99	Remote Characterization of In-ground Concrete Structures	2	N	X							X	
CH-DD12-99	Standardized Robotics Tooling	2	N								X	all apps
CH-MW03-99	Lead Removal, Segregation and Disposal	2	N		X			X				Pb
CH-MW07-99	Stabilization of Tritium Organic Waste	3	N					X				
ID-2.1.16	Decontamination Facility/Analytical Facility Waste Reduction	1	N					X				treatment/WM
ID-3.1.45	Volumetric Radioassay of Lead Sheet, Plate, Shot, & Irregular Shapes for "No DOE Rad Added" Determinations	1	N	**X**				X				Pb/Rad
ID-7.2.03	Concrete Decontamination	2	N			X						
ID-7.2.04	Metal Decontamination	2	N		X							
ID-7.2.05	Waste Recycle	2	N					X				concrete/steel
ID-7.2.06	Remote Characterization	2	N	X							X	
ID-7.2.07	Remote Demolition	2	N				X				X	
ID-7.2.08	Robotics for D&D	2	N								X	all apps
ID-7.2.09	Rapid Wood Radiological Contamination Monitor	2	N	**X**				X				segregate
ID-7.2.10	Treatment Technologies to Treat Reactor Canal (TRA-660) Water	2	N					X				liquid treatment
ID-7.2.11	Asbestos Wrapped/Insulated Pipe Removal and Packaging	2	N					X				asbestos
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater	2	N				X				X	underwater
ID-7.2.13	Penetrations in Concrete Floor and Demolition of Concrete Roof	2	N				X					
ID-7.2.14	Technology for Decontamination of Radionuclide Contaminated Lead Shot, Brick, and Sheeting for Free Release	2	N		X							Pb
ID-7.2.15	Field Screening of Paint/Painted Surfaces to Identify Lead Contamination in Paint	2	N	X								Pb in paint

Summary Disposition of 158 FY99 DDFA Needs

Deployment Commitments (IPABS)	20
ASTDs & Other Deployments	10
Potential Deployments (IPABS)	13
Potential Solutions w/in DDFA portfolio	39
DDFA funded RD&D efforts	47
No solution proposed at this time	29
	158



DDFA & Non-DDFA Needs by Problem Category

Characterization	63
Decontamination	42
Demolition/Size Reduction	21
Material Disposition	19
H&S and other	35
	180

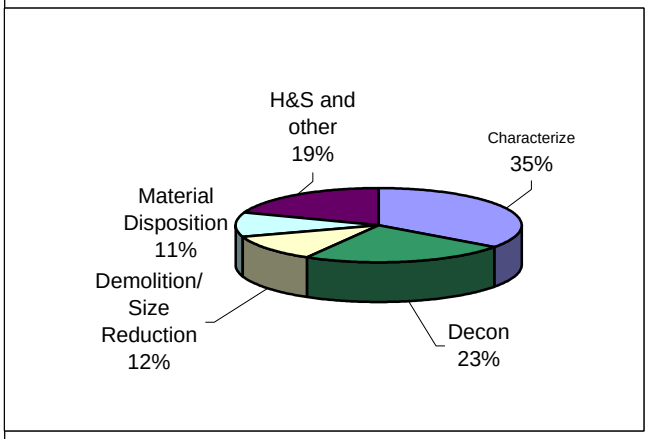


Table B.1 Needs and Problem Area Categories

Site Need ID	Need Title	Priority	Science	Characterize	Decon M	Decon C	Demol/SR	MD/Recycle	H&S	Other	Remote/robo	Comment
ID-7.2.16	Field Screening of Lead (shot, bricks, sheeting) for Radionuclide Contamination	2	N	**X**				X				Pb/Rad
ID-7.2.17	Field Screening of Samples and Equipment Surfaces to Indentify PCB Contamination	2	N	X								PCB
ID-7.2.18	General Use Remote Tools for Handling Small Items (e.g., pliers) or for Hooking to Rigging	2	N								X	all apps
ID-7.2.19	Remote/Robotic Technologies for Access and Deployment of Characterization & Sampling Tools	2	N	X							**X**	
ID-7.2.20	Quantitative Underwater Radionuclide Characterization of Structures, Equipment, and Contaminated Pool Walls	2	N	**X**							X	underwater
ID-7.2.21	Removal of Two Reactors as Single Unit	2	N				X	X			X	removal/handling
ID-S.2.05	Understanding the Physics and Chemistry of Concrete Decontamination	2	Y			X						
ID-S.2.06	Understanding the Physics and Chemistry of Metal Decontamination	2	Y		X							
NV09-9902-12	Nonintrusive Surveys in Pipes and Vessels	3	N	X								
NV10-9902-09S	Improved Detection & Characterization of Large Metal & Concrete Surfaces	3	Y	X							X	
NV21-9902-13	Roof Stabilization for Contaminated Facilities	3	N						X			
NV07-9902-05	Oversize TRU Waste Size Reduction	2	N				X					
OH-C901	Robotic Device to Improve Characterization of Underground Pipe Lines	2	N	X							X	
OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement	2	N				X				X	
OH-F027	Improved Equipment Dismantlement	2	N				X					
OH-F042	Telemetric Monitoring of Heat Stress	2	N						X			
OH-M901	Improved Facility Survey Techniques	1	N	X								
OH-M902	Decontamination Techniques for Tritiated Gloveboxes	2	N		X							tritium glovebox
OH-M903	Method for Controlling Off-Gassing and Removable Contamination from Tritium Piping	2	N						X			tritium
OH-M905	Treatment of Tritiated Pump Oils and Mercury	1	N					X				liquid treatment
OH-M909	Automated Dust Supression System	3	N						X			
OH-WV901	Characterization of Low Level and Transuranic Waste	2	N	**X**				X				segregate
OH-WV902	Decontamination of HLW Canisters	1	N		X						X	
OH-WV903	Vitrification Expended Material Processing	1	N		X		X	**X**			X	
OH-WV908	Decontamination of HLW Contaminated Equipment	3	N		X							
OK99-23	Field Surveillance Device for Detection of Radium-226	1	N	X								
ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials	2	N	X								free release
ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials	2	N		X							free release
ORDD-03	Improved Decontamination of Facility Concrete and Painted Surfaces	2	N			X						free release
ORDD-06	Improved Remote Decontamination Methods	3	N		X	X					**X**	
ORDD-07	Remote Dismantlement Methods	3	N				X				**X**	
ORDD-08	Mercury Removal from Metal and Porous Surfaces	3	N		X	X						Hg
ORDD-09	Improved Non-Thermal Cutting of Process Equipment	2	N				**X**				X	
ORDD-10	Improved Asbestos Disposition	2	N					X				asbestos
ORDD-12	Improved Characterization of Buildings and Facilities	2	N	X								
RF-DD01	Improved Decommissioning Characterization for Distinguishing Between TRU and Low-Level Contamination		N	**X**							X	segregate TRU
RF-DD02	High Speed Integrated Characterization System for (1) Radioactive, (2) Hazardous and (3) Toxic Contamination		N	**X**							X	
RF-DD03	Improved Interior Airborne Particulates Control		N						X			
RF-DD04	Improved Measurement Techniques for Free Release of Property and Salvageable Equipment Contaminated with Radionuclides		N	X				X				segregate
RF-DD07	Improved Disposition of Raschig Ring Tanks		N					X			X	
RF-DD08	Improved Worker Protection Clothing and Systems		N						X			
RF-DD09	Improved Decontamination of Porous Surfaces in Preparation for Building Demolition		N			X						
RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures		N		X							

Table B.1 Needs and Problem Area Categories

Site Need ID	Need Title	Priority	Science	Characterize	Decon M	Decon C	Demol/SR	MD/Recycle	H&S	Other	Remote/robo	Comment
RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste		N				X					insitu non-thermal
RF-DD15	Real-Time Beryllium Surface Characterization		N	X								
RF-DD16	Real-Time Beryllium Air Monitoring		N	X					**X**			
RF-WM12	Bulk Debris Characterization Techniques		N	X								
RL-DD01	Cesium Capsule Leak Detection System for WESF	2	N	X							X	inspection
RL-DD02	Glove Box Volume Size Reduction System for PFP	1	N				X				X	
RL-DD03	Terminal Clean-out and TRU Waste Decontamination of PFP	1	N		X			**X**			X	
RL-DD04	TRU Waste Fixatives for PFP	1	N						X			fixatives
RL-DD05	Characterization of Building 324 and 327	2	N	X							X	
RL-DD06	Decontamination of Building 324 and 327	2	N		X	X					X	
RL-DD07	Fixatives for Building 324 and 327	2	N						X			fixatives
RL-DD08	Remote Cutting Technologies for Building 324 and 327	2	N				X				X	
RL-DD09	Tank Remediation for Building 324	2	N		X			**X**			X	
RL-DD010	Radiation Hardened Robotics for Building 324	2	N								X	deployment systs
RL-DD011	Structural Integrity Inspection Technologies - 324/327 Buildings Hot Cell Liners	2	N	X							X	inspection
RL-DD017	Segregation of Waste for the D&D Program for the Purpose of Disposal	1	N	X				**X**				segregate
RL-DD021	Metal Decontamination and Recycling for the D&D Program	2	N		**X**			X				recycle
RL-DD029	Critically Safe Vacuum System for 233-S	1	N						X			
RL-DD030	Cutting Plutonium Contaminated Pipe for 233-S	1	N				X					
RL-DD031	Non-Intrusive Detection of Pipe Contents for 233-S	1	N	X								detect liq/gas
RL-DD032	Contamination Fixative for 233-S	1	N						X			fixatives
RL-DD033	Field Screening for Hazardous Materials for 105-F and 105-DR Reactors	2	N	**X**				X				RCRA metals/PCB
RL-DD034	Remote/Robotic Technologies for Access and Deployment of Characterization and Sampling Tools for CDI	1	N	X							**X**	deployment systs
RL-DD035	Visual/Spatial Imaging of the 221-U Facility and Equipment for CDI	2	N	**X**							X	plannning
RL-DD036	General Radiation Surveys of Concrete and Equipment in the Materials Processing Facilities for CDI	2	N	**X**							X	
RL-DD037	Detection of Free Standing Liquid in Equipmant (e.g., tanks) and Piping for CDI	1	N	**X**							X	detect liquids
RL-DD038	Characterization of Liquids in Equipmant (e.g., tanks) and Piping for CDI	2	N	**X**							X	quantify liquids
RL-DD039	Characterization of Solids (Sediment/Sludge/Dust) on Floors and Walls, and in Equipment in the Materials Processing Facilities for CDI	2	N	**X**							X	
RL-DD040	Characterization of Concrete Floors and Walls in the Materials Processing Facilities for CDI	2	N	**X**							X	
RL-DD041	Capsule Integrity Assessment Method for WESF	3	N	**X**							X	inspection
RL-DD042	Hot Cell Window Life Extension for WESF	2	N						X			
RL-DD043	Crane System Upgrades for Hot Cell Canyon and Cesium Capsule Pool in WESF	2	N					X			X	handling
RL-DD044	Cesium and Strontium Inventory Removal From K3 Duct at WESF	2	N		**X**			X			X	
RL-DD045	Fixatives for K3 Duct at WESF	3	N						X			fixatives
RL-DD046	Clean-Out of Isolated Piping Systems in Building 324	2	N		**X**						X	
RL-DD047	Remote Viewing for Hot Cells in Buildings 324 and 327	2	N	X					X		X	visual inspection
RL-DD048	Volume Reduction of Equipment for CDI	2	N				X	**X**				
RL-DD049	Waste Encapsulation and Stabilization for CDI	2	N					X				
RL-DD050	Sealant Technologies for CDI	1	N							X		sealing joints
RL-DD051	High Profile Surface Barrier for CDI	1	N							X		landfill cover
RL-DD052	CDI - Long-term monitoring around and under the 221-U Facility	2	N	X								L-T monitoring
RL-DD053	Computerized modeling for facility planning, operation, and waste loading and tracking for the CDI Project	3	N						X	**X**		modeling/planning
RL-DD054	CDI - Electronic job control system for the Surveillance and Maintenance Program	3	N						X	**X**		modeling/planning

Table B.1 Needs and Problem Area Categories

Site Need ID	Need Title	Priority	Science	Characterize	Decon M	Decon C	Demol/SR	MD/Recycle	H&S	Other	Remote/robo	Comment
RL-DD055	CDI - Remote monitoring system upgrades for the Surveillance and Maintenance Program	3	N	X					X	X	X	monitoring S&M
RL-DD056	Facility structural life model for optimizing maintenance and time to decommission for the Surveillance and Maintenance Program	2	N						X	X		structural models
RL-DD057	Replacement roof of long-lived construction for the PUREX facility	2	N						X	X		roof
RL-DD059	Decontamination of surface contaminated lead for the Surveillance and Maintenance Program	3	N		X							Pb; for release
RL-DD060	Characterization for Waste Handling, Packaging and Processing for 233-S	2	N	X				X				waste handling
RL-DD061	Remote systems for characterization and clean up of the 233-S Process Hood	1	N	X	X		X	X			X	remote system
RL-DD062	A Method to Capture Airborne Alpha Contamination for 233-S	2	N						X			
RL-DD063	Decontamination of Transuranic Debris for 233-S	2	N		X							metallic debris
RL-DD064	Characterization of the 105-F Spent Fuel Basin	2	N	X								
RL-DD065	Backfill Removal and Segregation for the 105-F Spent Fuel Basin	2	N					X				segregate
RL-DD066	Material Removal and Segregation for the 105-F Spent Fuel Basin	2	N					X				segregate
RL-DD022-S	Photon-Assisted Decontamination Chemistry	2	Y		X	X						
RL-DD023-S	Cesium Source Identification	1	Y	X								
RL-DD025-S	Effluent Capture	1	Y						X			
RL-DD026-S	Contaminant Binding Science Need	1	Y		X	X			X			fixatives
RL-DD027-S	Cesium Integrity Assessment	2	Y	X								
RL-DD028-S	Hot Cell Window Gasket and Seal Degradation	2	Y						X			
RL-DD029-S	Algae Corrosion and Growth Inhibition	1	Y					X				
RL-DD030-S	Polystyrene Cube Analysis for the Plutonium Finishing Plant (PFP)	1	Y						X			
RL-DD031-S	Polystyrene Off-Gas Analysis for the Plutonium Finishing Plant (PFP)	1	Y						X			
RL-DD032-S	Measurement of Moisture Content in Plutonium Oxides and other Materials for the Plutonium Finishing Plant (PFP)	2	Y	X								
RL-DD033-S	Reaction of Neutrons with Detectors for Building 324	1	Y	X				X				
RL-DD034-S	TRU Model for 324 Building Waste	1	Y	X								
RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH TRUW	1	N				X				X	
RL-MW03	Remote Characterization to distinguish TRUW from Non-TRUW Portions of Various-Sized Debris in High Beta/Gamma Field	2	N	X				X			X	
RL-MW04	Remote Decontamination of RH-TRUW Debris to Support Reclassification into Non-TRU Category	2	N		X	X		X			X	TRU debris
RL-SNF01	Contaminant Mapping of K-Basins	3	N	X								
RL-SNF02	Decontamination of K-Basin Pool	2	N			X						
RL-SNF03	Fixatives for K-Basin	3	N						X			fixatives
RL-SNF05	Underwater Fuel Rack Cutting System	2	N				X					
RL-SNF06	Sludge Treatment Process	1	N					X				sludge treatment
SR99-1014	Cleaning of Alpha Contaminated Launderables	2	N						X			
SR99-2029	Alternate DWPF Canister Decon Technology	3	N		X							
SR99-2031	Develop Remote Technology to Improve DWPF Operations	3	N		X			X			X	
SR99-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment	3	N				X				X	
SR99-4001	Dismantlement of Large and/or Complex Equipment and Structures	3	N				X				X	
SR99-4002	Characterization of Contaminated Surfaces	3	N	X								to free release
SR99-4003	Material Recycle (Process Equipment, Metal, Steel, and Concrete)	3	N					X				
SR99-4004	Decontamination of Contaminated Concrete	3	N			X						
SR99-4005	Characterization of Inaccessible Areas	3	N	X							X	
SR99-4006	Asbestos Treatment to Allow Reuse	3	N					X				asbestos
SR99-4007	Characterization of Volumetrically Contaminated Surfaces	3	N	X								
SR99-4008	Dismantlement of Concrete-Encased Piping	3	N				X					

Table B.1 Needs and Problem Area Categories

Site Need ID	Need Title	Priority	Science	Characterize	Decon M	Decon C	Demol/SR	MD/Recycle	H&S	Other	Remote/robo	Comment
SR99-4009	Improved Exhaust Treatment Systems	3	N						X			
SR99-4010	Characterization Data Management	3	N	X								
SR99-4011	Waste Characterization	3	N	X				X				segregate
SR99-4012	Stabilization of Contaminated Equipment/Components/Surfaces	3	N						X			
SR99-4013	Containment/Confinement Technologies	3	N						X			
SR99-4014	Basin Cleanup Technology	3	N					X				liquid treatment
SR99-4015	Decontamination of Small Components	3	N		X							
SR99-4016	Health and Safety Technologies	3	N						X			
	Non-DDFA need tracked by DDFA											
	Deleted by Site or not considered a "true" DDFA need by DDFA											

Table B.2 Disposition of DDFA FY1999 Needs

Status	Site Need ID	Need Title	in IPABS "Needs Tab"	Technology/Project Name	TMS ID	Comments
D	AL-09-01-12-MW	Decontamination and Volume Reduction of TRU and LLW Metals		Decontamination & Volume Reduction System	2242	
D	CH-DD01-99	Characterization for D&D of the Brookhaven Graphite Research Reactor		MARSSIM; In Situ Object Counting System (ISOCS)	2374; 2098	
D	CH-DD05-99	Size Reduction of Large Concrete Structures	Y	Swing-Reduced Crane Control & Remote Control Concrete Demolition System	1815 & 2100	
D	CH-DD06-99	Size Reduction of Massive Metal Structures	Y	Remote Control Concrete Demolition System	2100	
D	ID-7.2.07	Remote Demolition	Y	Remote Control Concrete Demolition System & Track Mounted Shear/Crusher	2100 & 2303	INEEL has also deployed the Soft-Sided Waste Containers (TMS# 2240) & Excel Automatic Locking Scaffolding (TMS# 2320) to address this need.
D	ID-7.2.08	Robotics for D&D	Y	Remote Control Concrete Demolition System & Track Mounted Shear/Crusher	2100 & 2303	INEEL has also deployed the Remote Underwater Characterization System (TMS# 2151) to address this need; FY00 demo of ENVAC Robotic Metal Grit Blasting (TMS # tbd) also addresses need
D	ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater	Y	Remote Control Concrete Demolition System, Track Mounted Shear/Crusher & Hand Held Shear	2100, 2303 & 2304	
D	ID-7.2.15	Field Screening of Paint/Painted Surfaces to Identify Lead Contamination in Paint	Y	Lead Paint Analyzer	2317	FY00 demo of ENVAC Paint Scaler (TMS # tbd) also addresses need
D	NV10-9902-09S	Improved Detection & Characterization of Large Metal & Concrete Surfaces	Y	Position Sensitive Radiation Monitor (Surface Contamination Monitor)	1942	
D	OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement	Y	Oxygasoline Torch	1847	
D	OH-M901	Improved Facility Survey Techniques	Y	Portable Scintillation Counter, Direct Reading Tritium Monitor & Real-Time Surface Tritium Monitor	2311, 2310 & 2933	
D	RL-DD030	Cutting Plutonium Contaminated Pipe for 233-S	Y	High Speed Clamshell Pipe Cutter	1807	
D	RL-DD034	Remote/Robotic Technologies for Access and Deployment of Characterization and Sampling Tools for CDI	Y	CDI Remote Characterization System (ANDROS)	2178	
D	RL-DD035	Visual/Spatial Imaging of the 221-U Facility and Equipment for CDI	Y	GammaCam Radiation Imaging System	1840	RL also notes potential deployment of ISOCS (TMS# 2098); the AIL 3-D Visual & Gamma Ray Imaging System (TMS# 2402) may be the preferred technology
D	RL-DD036	General Radiation Surveys of Concrete and Equipment in the Materials Processing Facilities for CDI	Y	GammaCam Radiation Imaging System	1840	RL also notes potential deployment of ISOCS (TMS# 2098); the AIL 3-D Visual & Gamma Ray Imaging System (TMS# 2402) may be the preferred technology
D	RL-DD037	Detection of Free Standing Liquid in Equipmant (e.g., tanks) and Piping for CDI	Y	Non-Intrusive Liquid Level Detection System	2403	Technology also in TMS as ID# 2327
D	SR99-4002	Characterization of Contaminated Surfaces	Y	LRAD for Component Monitoring (BNFL IonSens) & Electret Ionization Chambers	2382 & 2315	Laser Induced Fluorescence Imaging (TMS# 1999), Portable X-Ray Spectrometer (TMS# 1790), Mobile Automated Characterization System (TMS# 1798), Indoor Radiation Mapping Using Laser Assisted Ranging and Data System (TMS# 1946) and Surface Contamination Monitor (TMS# 1942) listed as a Potential Deployment
D	SR99-4005	Characterization of Inaccessible Areas	Y	LRAD for Component Monitoring (BNFL IonSens)	2382	Portable X-Ray, K-Edge (TMS# 134), Pipe Crawler (TMS# 1810) and Small Pipe Characterization System (TMS# 43) listed as a Potential Deployment
D	SR99-4007	Characterization of Volumetrically Contaminated Surfaces	Y	Electret Ionization Chamber	2315	
D	SR99-4012	Stabilization of Contaminated Equipment/Components/Surfaces	Y	Strippable Coatings & Fixatives (ALARA 1146 Cavity Decon)	2314	
ASTD	ID-7.2.06	Remote Characterization	Y	INEEL LSDDP; Remote Underwater Characterization System (RUCS) & Electromagnetic Radiography (EMR)	2202; 2151 & 2390	INEEL has already deployed RUCS to address this need (not listed in IPABS); EMR FY99 demo
ASTD	ID-7.2.19	Remote/Robotic Technologies for Access and Deployment of Characterization & Sampling Tools	Y	INEEL LSDDP; Remote Underwater Characterization System (RUCS)	2202; 2151	INEEL has already deployed RUCS to address this need (not listed in IPABS)
ASTD	ID-7.2.20	Quantitative Underwater Radionuclide Characterization of Structures, Equipment, and Contaminated Pool Walls	Y	INEEL LSDDP; Remote Underwater Characterization System (RUCS)	2202; 2151	INEEL has already deployed RUCS to address this need (not listed in IPABS)
ASTD	OH-F027	Improved Equipment Dismantlement	Y	Mobile Work Platform	2243	
ASTD	RF-DD01	Improved Decommissioning Characterization for Distinguishing Between TRU and Low-Level Contamination	Y	RFETS ASTD; Decommissioning In-Situ Plutonium Inventory Monitor & SWB Crate Counter	2207; 2241 & 2917	
ASTD	RF-DD03	Improved Interior Airborne Particulates Control	Y	RFI	2918	EMSP Project # 60163 may also address this need
ASTD	RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste	Y	RFI & RFETS ASTD; Remote/Robotic Size Reduction System	2918 & 2916	RF also notes potential deployment of Innovative Size Reduction Shears/Nibblers, Oxygasoline Torch, & the SRS FY99 demonstrated Size Reduction & Deployment Shear Platform (TMS# 2326/2325, 1847 & 2395) to address this need
ASTD	RL-DD06	Decontamination of Building 324 and 327	Y	RL ASTD; Robotic Platform for B-Cell Cleanout	2919	
ASTD	RL-DD08	Remote Cutting Technologies for Building 324 and 327	Y	RL ASTD; Robotic Platform for B-Cell Cleanout	2919	
ASTD	SR99-4014	Basin Cleanup Technology	Y	3-M Empore and NURES Nuclide Removal System	1543 & 2937	
P	NV09-9902-12	Nonintrusive Surveys in Pipes and Vessels	Y	Pipe Crawler Internal Pipe Characterization System & PipeExplorer	1810 & 74	
P	OH-C901	Robotic Device to Improve Characterization of Underground Pipe Lines	Y	PipeExplorer	74	
P	OH-M905	Treatment of Tritiated Pump Oils and Mercury	Y	Waterworks Crystal Super-absorbent Polymer Water Solidification & NOCHAR Tritiated Oil Solidification (Petro Bond System)	2312 & 2313	
P	RF-DD07	Improved Disposition of Raschig Ring Tanks		Sugar Fogging	non-OST	commercially available
P	RF-DD08	Improved Worker Protection Clothing and Systems	Y	Personal Ice Cooling System (PICS)	1898	
P	RF-DD15	Real-Time Beryllium Surface Characterization		Beryllium Swipe Monitor	2915	FY00 DDFA New Starts
P	RF-DD16	Real-Time Beryllium Air Monitoring		Beryllium Air Monitor	2914	FY00 DDFA New Starts
P	RL-DD05	Characterization of Building 324 and 327	Y	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	1946	
P	SR99-4004	Decontamination of Contaminated Concrete	Y	2-D Linear Motion System, ROTO Peen Scaler w/VACPAC System & Laser Surface Cleaning	1476, 1943 & 32	
P	SR99-4006	Asbestos Treatment to Allow Reuse	Y	In Situ Chemical Treatment of Asbestos & Thermal Conversion of Asbestos	73 & 224	
P	SR99-4008	Dismantlement of Concrete-Encased Piping	Y	Diamond Wire Cutting	2389	
P	SR99-4010	Characterization Data Management	Y	Mobile Automated Characterization System (MACS), 3-D Integrated Characterization and Archiving System (3D-ICAS), Indoor Radiation Mapping Using Laser Assisted Ranging and Data System (LARADS) & Surface Contamination Monitor	1798, 97, 1946 & 1942	
P	SR99-4011	Waste Characterization	Y	Portable X-Ray, K-Edge	134	
PORT-FOLIO	AL-07-01-12-DD	New Technologies to Decontaminate and Decommission Radioactively Contaminated Facilites	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	AL-08-06-02-DD	Decontamination of Concrete Surfaces Contaminated w/Radionuclides & High Explosive Materials Using Microbially Influence Degradation	Y	Biodegredation of Concrete	1421	See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	CH-DD02-99	Decontamination of Exterior Fixed Surface Contamination of the 310 Retention Tanks	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)

Table B.2 Disposition of DDFA FY1999 Needs

Status	Site Need ID	Need Title	in IPABS "Needs Tab"	Technology/Project Name	TMS ID	Comments
PORT-FOLIO	CH-DD03-99	Metal Decontamination (tank internals)	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	CH-DD04-99	Improved Worker Protection Equipment	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	CH-DD07-99	Decontamination of Fixed Surface Contamination of Concrete (thin layer removal)	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	CH-DD08-99	Remote Decontamination of In-ground Concrete Structures	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	CH-DD11-99	Remote Characterization of In-ground Concrete Structures	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	OH-F042	Telemetric Monitoring of Heat Stress	Y	Heat Stress Monitoring System	1953	See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	ORDD-03	Improved Decontamination of Facility Concrete and Painted Surfaces	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	ORDD-06	Improved Remote Decontamination Methods	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	ORDD-07	Remote Dismantlement Methods	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	ORDD-08	Mercury Removal from Metal and Porous Surfaces	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	ORDD-09	Improved Non-Thermal Cutting of Process Equipment	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	ORDD-10	Improved Asbestos Disposition	Y	Asbestos Pipe-Insulation Removal System (BOA)	148	See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	ORDD-12	Improved Characterization of Buildings and Facilities	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	RF-DD02	High Speed Integrated Characterization System for (1) Radioactive, (2) Hazardous and (3) Toxic Contamination	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	RF-DD09	Improved Decontamination of Porous Surfaces in Preparation for Building Demolition	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	RL-DD03	Terminal Clean-out and TRU Waste Decontamination of PFP	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	RL-DD09	Tank Remediation for Building 324	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	RL-DD010	Radiation Hardened Robotics for Building 324	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	RL-DD011	Structural Integrity Inspection Technologies - 324/327 Buildings Hot Cell Liners	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	RL-DD017	Segregation of Waste for the D&D Program for the Purpose of Disposal	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	RL-DD021	Metal Decontamination and Recycling for the D&D Program	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	RL-DD031	Non-Intrusive Detection of Pipe Contents for 233-S	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	RL-DD033	Field Screening for Hazardous Materials for 105-F and 105-DR Reactors	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	RL-DD043	Crane System Upgrades for Hot Cell Canyon and Cesium Capsule Pool in WESF	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	RL-DD046	Clean-Out of Isolated Piping Systems in Building 324	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	RL-DD047	Remote Viewing for Hot Cells in Buildings 324 and 327	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	RL-DD064	Characterization of the 105-F Spent Fuel Basin	na	Remote Underwater Characterization System (RUCS)	2151	See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	SR99-1014	Cleaning of Alpha Contaminated Launderables		Commercially available systems		
PORT-FOLIO	SR99-4003	Material Recycle (Process Equipment, Metal, Steel, and Concrete)	Y	Stainless Steel Beneficial Reuse	80	See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	SR99-4013	Containment/Confinement Technologies		Commercially available systems (PERMACON Enclosure)		The Mound demonstrated Waterworks Water Solidification (TMS# 2312) also partially addresses this need
PORT-FOLIO	SR99-4015	Decontamination of Small Components	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
PORT-FOLIO	SR99-4016	Health and Safety Technologies	Y			See list of Potential Technology Solutions Provided in IPABS (Table B.3 attached)
RD&D	AL-07-06-01-DD	Decontamination and Decommissioning (D&D) Technology Development	Y	SBIR Project " In-Situ Decontamination of Facilities Containing High Explosives" addresses this need		
RD&D	AL-09-01-02-DD-S	Radiological Air Monitoring Needs for Current D&D/ER Operations		Thermo Power: Alpha CEM	2225	EMSP Projects# 60163 & 60474 also address this need
RD&D	AL-09-01-11-MW	Characterization of Equipment Potentially Contaminated with Alpha Emitting Transuranic (TRU) Radionuclides		LANL LSDDP; Vehicle and Cargo Inspection System	2203; 2912	
RD&D	AL-09-01-13-DD	On-Site Quantitation of Plutonium and Americium in Soil and Concrete Rubble from D&D Projects	Y	TTP# FT00C251	tbd	FY00 DDFA New Starts
RD&D	AL-09-01-14-DD	Quantitation of Tritium in Concrete Rubble from D&D Projects	Y	TTP# FT00C251	tbd	FY00 DDFA New Starts

Table B.2 Disposition of DDFA FY1999 Needs

Status	Site Need ID	Need Title	in IPABS "Needs Tab"	Technology/Project Name	TMS ID	Comments
RD&D	CH-DD09-99	Tritium Removal by Laser Heating	Y	Diamond Wire Cutting Technology Assessment of Tokamak Fusion Test Reactor Vacuum Vessel Surrogate	2389	
RD&D	ID-3.1.45	Volumetric Radioassay of Lead Sheet, Plate, Shot, & Irregular Shapes for "No DOE Rad Added" Determinations		TTP# FT00C251		FY00 DDFA New Starts
RD&D	ID-7.2.03	Concrete Decontamination	Y	INEEL LSDDP; ENVAC Robotic Metal Grit Blasting	2202; tbd	FY00 demo
RD&D	ID-7.2.04	Metal Decontamination	Y	INEEL LSDDP; ENVAC Robotic Metal Grit Blasting	2202; tbd	FY00 demo
RD&D	ID-7.2.05	Waste Recycle	Y	INEEL LSDDP; Alloy Analyzer & Nukem Copper Recycle	2202; 2397 & tbd	Copper Recycle FY00 demo
RD&D	ID-7.2.09	Rapid Wood Radiological Contamination Monitor		INEEL LSDDP	2202	Technology Screening in FY00
RD&D	ID-7.2.10	Treatment Technologies to Treat Reactor Canal (TRA-660) Water	Y	INEEL LSDDP	2202	Technology Screening in FY00
RD&D	ID-7.2.11	Asbestos Wrapped/Insulated Pipe Removal and Packaging	Y	INEEL LSDDP; Asbestos Pipe-Insulation Removal System (BOA)	2202; 148	BOA is being considered for FY00 demo
RD&D	ID-7.2.13	Penetrations in Concrete Floor and Demolition of Concrete Roof	Y	INEEL LSDDP	2202	Technology Screening in FY00
RD&D	ID-7.2.14	Technology for Decontamination of Radionuclide Contaminated Lead Shot, Brick, and Sheeting for Free Release	Y	INEEL LSDDP	2202	Technology Screening in FY00
RD&D	ID-7.2.16	Field Screening of Lead (shot, bricks, sheeting) for Radionuclide Contamination		INEEL LSDDP; Paint Scaler	2202; tbd	FY00 demo
RD&D	ID-7.2.17	Field Screening of Samples and Equipment Surfaces to Indentify PCB Contamination		IDAHO LSDDP; PCB Analyzer & Paint Scaler	2202; 2398 & tbd	FY00 demos
RD&D	ID-7.2.18	General Use Remote Tools for Handling Small Items (e.g., pliers) or for Hooking to Rigging		INEEL LSDDP	2202	Technology Screening in FY00
RD&D	ID-7.2.21	Removal of Two Reactors as Single Unit		INEEL LSDDP	2202	Technology Screening in FY00; SBIR Project " Development of an Underwater Cutting Process for Dismantlement and Size Reduction Using Abrasive Suspension Jets" addresses this need
RD&D	ID-S.2.05	Understanding the Physics and Chemistry of Concrete Decontamination		EMSP Projects# 64865, & 64912 address this need		
RD&D	ID-S.2.06	Understanding the Physics and Chemistry of Metal Decontamination		EMSP Projects# 55380, 64865, & 64912 address this need		
RD&D	OH-M902	Decontamination Techniques for Tritiated Gloveboxes	Y	Mound LSDDP	2201	Technology Screening in FY00
RD&D	OH-M903	Method for Controlling Off-Gassing and Removable Contamination from Tritium Piping	Y	Mound LSDDP	2201	Technology Screening in FY00
RD&D	OH-M909	Automated Dust Supression System	Y	Mound LSDDP	2201	Technology Screening in FY00
RD&D	OH-WV902	Decontamination of HLW Canisters	Y	AEA Soft Media Blast Cleaning	1899	Possible FY00 demo being investigated
RD&D	OH-WV903	Vitrification Expended Material Processing		AEA Soft Media Blast Cleaning	1899	Possible FY00 demo being investigated
RD&D	RL-DD02	Glove Box Volume Size Reduction System for PFP	Y	NV Laser Cutting ASTD, RFETS Remote/Robotic Size Reduction System ASTD, & LANL DVRS ASTD	1477, 2916 & 2242	
RD&D	RL-DD04	TRU Waste Fixatives for PFP	Y	SRS demonstrated Strippable Coating & Fixative (ALARA 1146 Cavity Decon)	2314	
RD&D	RL-DD07	Fixatives for Building 324 and 327	Y	SRS demonstrated Strippable Coating & Fixative (ALARA 1146 Cavity Decon)	2314	
RD&D	RL-DD032	Contamination Fixative for 233-S	Y	SRS demonstrated Strippable Coating & Fixative (ALARA 1146 Cavity Decon)	2314	
RD&D	RL-DD038	Characterization of Liquids in Equipmant (e.g., tanks) and Piping for CDI	Y	CDI	2206	Technology Screening in FY00
RD&D	RL-DD039	Characterization of Solids (Sediment/Sludge/Dust) on Floors and Walls, and in Equipment in the Materials Processing Facilities for CDI	Y	CDI	2206	Technology Screening in FY00
RD&D	RL-DD040	Characterization of Concrete Floors and Walls in the Materials Processing Facilities for CDI	Y	CDI	2206	Technology Screening in FY00; Commercially available Pioneer Robot may address this need
RD&D	RL-DD045	Fixatives for K3 Duct at WESF	Y	SRS demonstrated Strippable Coating & Fixative (ALARA 1146 Cavity Decon)	2314	
RD&D	RL-DD048	Volume Reduction of Equipment for CDI	na	CDI	2206	Technology Screening in FY00
RD&D	RL-DD049	Waste Encapsulation and Stabilization for CDI	na	CDI	2206	Technology Screening in FY00
RD&D	RL-DD050	Sealant Technologies for CDI	na	CDI	2206	Technology Screening in FY00
RD&D	RL-DD051	High Profile Surface Barrier for CDI	na	CDI	2206	Technology Screening in FY00
RD&D	RL-DD052	CDI - Long-term monitoring around and under the 221-U Facility	na	CDI	2206	Technology Screening in FY00
RD&D	RL-DD053	Computerized modeling for facility planning, operation, and waste loading and tracking for the CDI Project	na	CDI	2206	Technology Screening in FY00
RD&D	RL-DD054	CDI - Electronic job control system for the Surveillance and Maintenance Program	na	CDI	2206	Technology Screening in FY00
RD&D	RL-DD055	CDI - Remote monitoring system upgrades for the Surveillance and Maintenance Program	na	CDI	2206	Technology Screening in FY00
RD&D	RL-DD062	A Method to Capture Airborne Alpha Contamination for 233-S	na	EMSP Project # 60163 addresses this need		
RD&D	RL-DD023-S	Cesium Source Identification		EMSP Projects# 55247 & 64982 address this need		
RD&D	RL-DD025-S	Effluent Capture		EMSP Project# 60163 addresses this need		
RD&D	RL-DD026-S	Contaminant Binding Science Need		EMSP Projects# 55380, 54724, 59925, 64865, & 64912 address this need		
RD&D	SR99-4001	Dismantlement of Large and/or Complex Equipment and Structures	Y	SRS LSDDP; Size Reduction & Deployment Shear Platform	2200; 2395	FY99 demo
Gaps	AL-09-01-04-DD-S	Methodology for Effective D&D of Large Environmental Sites				
Gaps	AL-09-01-15-DD	Disposal & Recycle Technologies for Scrap Uranium Chips and Turnings				
Gaps	CH-DD10-99	Improved Waste Packaging for Remote Handled Waste				
Gaps	CH-DD12-99	Standardized Robotics Tooling				
Gaps	ID-2.1.16	Decontamination Facility/Analytical Facility Waste Reduction				
Gaps	NV21-9902-13	Roof Stabilization for Contaminated Facilities				
Gaps	OK99-23	Field Surveillance Device for Detection of Radium-226				
Gaps	RF-DD04	Improved Measurement Techniques for Free Release of Property and Salvageable Equipment Contaminated with Radionuclides				
Gaps	RL-DD029	Critically Safe Vacuum System for 233-S				
Gaps	RL-DD042	Hot Cell Window Life Extension for WESF				
Gaps	RL-DD044	Cesium and Strontium Inventory Removal From K3 Duct at WESF				
Gaps	RL-DD056	Facility structural life model for optimizing maintenance and time to decommission for the Surveillance and Maintenance Program	na			
Gaps	RL-DD057	Replacement roof of long-lived construction for the PUREX facility	na			
Gaps	RL-DD059	Decontamination of surface contaminated lead for the Surveillance and Maintenance Program	na			
Gaps	RL-DD060	Characterization for Waste Handling, Packaging and Processing for 233-S	na			
Gaps	RL-DD061	Remote systems for characterization and clean up of the 233-S Process Hood	na			
Gaps	RL-DD063	Decontamination of Transuranic Debris for 233-S	na			

Table B.2 Disposition of DDFA FY1999 Needs

Status	Site Need ID	Need Title	in IPABS "Needs Tab"	Technology/Project Name	TMS ID	Comments
Gaps	RL-DD065	Backfill Removal and Segregation for the 105-F Spent Fuel Basin	na			
Gaps	RL-DD066	Material Removal and Segregation for the 105-F Spent Fuel Basin	na			
Gaps	RL-DD022-S	Photon-Assisted Decontamination Chemistry				
Gaps	RL-DD027-S	Cesium Integrity Assessment				
Gaps	RL-DD028-S	Hot Cell Window Gasket and Seal Degradation				
Gaps	RL-DD029-S	Algae Corrosion and Growth Inhibition	na			
Gaps	RL-DD030-S	Polystyrene Cube Analysis for the Plutonium Finishing Plant (PFP)	na			
Gaps	RL-DD031-S	Polystyrene Off-Gas Analysis for the Plutonium Finishing Plant (PFP)	na			
Gaps	RL-DD032-S	Measurement of Moisture Content in Plutonium Oxides and other Materials for the Plutonium Finishing Plant (PFP)	na			
Gaps	RL-DD033-S	Reaction of Neutrons with Detectors for Building 324	na			
Gaps	RL-DD034-S	TRU Model for 324 Building Waste	na			
Gaps	SR99-4009	Improved Exhaust Treatment Systems				
"Y" in the "in IPABS Need Tab" refers to DDFA technical response identified one or more potential technologies to satisfy need (see Table B.3). "na" refers to needs not reported prior to IPABS data response in January 1999.						
Non-DDFA Needs						
RD&D	AL-08-01-17-MW	Certifiability of Newly Generated TRU Waste		LANL LSDDP		
D	NV07-9902-05	Oversize TRU Waste Size Reduction		NV LASER ASTD		
	AL-07-01-11-MW	Waste Sorting and Characterization				
	AL-07-01-14-MW	Appropriate Characterization of TRU Waste Now Stored in Fiberglass Reinforced Plywood Boxes for WIPP		LANL LSDDP & ASTD		
	CH-MW03-99	Lead Removal, Segregation and Disposal				
	CH-MW07-99	Stabilization of Tritium Organic Waste		MOUND ASTD ?		
	OH-WV901	Characterization of Low Level and Transuranic Waste				
	RF-WM12	Bulk Debris Characterization Techniques				
	RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH TRUW				
	RL-MW03	Remote Characterization to distinguish TRUW from Non-TRUW Portions of Various-Sized Debris in High Beta/Gamma Field				
	RL-MW04	Remote Decontamination of RH-TRUW Debris to Support Reclassification into Non-TRU Category				
	RL-DD01	Cesium Capsule Leak Detection System for WESF	Y			
	RL-DD041	Capsule Integrity Assessment Method for WESF				
	RL-SNF01	Contaminant Mapping of K-Basins				
	RL-SNF02	Decontamination of K-Basin Pool				
	RL-SNF03	Fixatives for K-Basin				
	RL-SNF05	Underwater Fuel Rack Cutting System				
	RL-SNF06	Sludge Treatment Process				
	OH-WV908	Decontamination of HLW Contaminated Equipment		AEA SOFT MEDIA BLAST		
	SR99-2029	Alternate DWPF Canister Decon Technology		AEA SOFT MEDIA BLAST		
	SR99-2031	Develop Remote Technology to Improve DWPF Operations				
	SR99-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment				
	"Y" refers to DDFA technical response identified one or more potential technologies to satisfy need (see Table B.3). "na" refers to needs not reported prior to IPABS data response in January 1999.					

Table B.3 Potential Solutions Provided to Sites by DDFA in IPABS

Need ID	Tech ID	Technology Title
AL-07-01-12-DD	32	Laser Surface Cleaning
AL-07-01-12-DD	955	Laser Decontamination and Recycle of Metals
AL-07-01-12-DD	1421	Biodegradation of Concrete
AL-07-01-12-DD	1476	2-D Linear Motion System
AL-07-01-12-DD	1780	Steam Vacuum Cleaning
AL-07-01-12-DD	1812	Rotary Peening with Captive Shot
AL-07-01-12-DD	1851	Centrifugal Shot Blast System
AL-07-01-12-DD	1943	ROTO PEEN Scaler and VAC PAC System
AL-07-01-12-DD	1950	Concrete Shaver
AL-07-01-12-DD	2099	Remotely Operated Scabbling
AL-07-01-12-DD	2102	Concrete Grinder
AL-07-01-12-DD	2152	Concrete Spaller
AL-07-01-13-DD	87	CORPEX Nuclear Decontamination Process
AL-07-01-13-DD	1450	Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT
AL-07-01-13-DD	1839	Reactor Surface Contamination Stabilization
AL-07-06-01-DD	1421	Biodegradation of Concrete
AL-07-06-01-DD	1780	Steam Vacuum Cleaning
AL-07-06-01-DD	1793	Gamma Ray Imaging System
AL-07-06-01-DD	1840	Gamma Cam (TM) Radiation Imaging System
AL-07-06-01-DD	1851	Centrifugal Shot Blast System
AL-07-06-01-DD	1950	Concrete Shaver
AL-07-06-01-DD	2099	Remotely Operated Scabbling
AL-07-06-01-DD	2102	Concrete Grinder
AL-07-06-01-DD	2152	Concrete Spaller
AL-08-06-02-DD	1421	Biodegradation of Concrete
AL-09-01-13-DD	2158	Segmented Gate System
AL-09-01-14-DD	2158	Segmented Gate System
CH-DD02-99	32	Laser Surface Cleaning
CH-DD02-99	369	Soda Blasting Decontamination Process
CH-DD02-99	955	Laser Decontamination and Recycle of Metals
CH-DD02-99	1780	Steam Vacuum Cleaning
CH-DD02-99	1899	Soft Media Blast Cleaning
CH-DD02-99	1943	ROTO PEEN Scaler and VAC PAC System
CH-DD03-99	87	CORPEX Nuclear Decontamination Process
CH-DD03-99	1450	Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT
CH-DD04-99	1854	FRHAM-TEX Anti Contamination Suit
CH-DD04-99	1855	NuFab Anti Contamination Suit
CH-DD04-99	1898	Personal Ice Cooling System (PICS)
CH-DD04-99	1953	Heat Stress Monitoring System
CH-DD04-99	1954	Sealed-Seam Sack Suit
CH-DD04-99	2104	Wireless Remote Monitoring System
CH-DD04-99	2243	Mobile Work Platform
CH-DD04-99	2320	Snap Together Scaffolding
CH-DD05-99	1787	Dual Arm Work Platform Teleoperated Robotics System
CH-DD05-99	1799	Mobile Robot Worksystem (ROSIE)
CH-DD05-99	1815	Swing-Reduced Crane Control
CH-DD05-99	2100	Remote Control Concrete Demolition System
CH-DD05-99	2303	Track Mounted Shear/Crusher
CH-DD06-99	1477	Laser Cutting and Size Reduction
CH-DD06-99	1787	Dual Arm Work Platform Teleoperated Robotics System
CH-DD06-99	1799	Mobile Robot Worksystem (ROSIE)
CH-DD06-99	1807	High Speed Clamshell Pipe Cutter
CH-DD06-99	1815	Swing-Reduced Crane Control
CH-DD06-99	1847	Oxy-Gasoline Torch
CH-DD06-99	1948	Self Contained Pipe Cutting Shear
CH-DD06-99	2303	Track Mounted Shear/Crusher
CH-DD06-99	2304	Hand Held Shear
CH-DD07-99	32	Laser Surface Cleaning
CH-DD07-99	1421	Biodegradation of Concrete
CH-DD07-99	1812	Rotary Peening with Captive Shot

Table B.3 Potential Solutions Provided to Sites by DDFA in IPABS

Need ID	Tech ID	Technology Title
CH-DD07-99	1851	Centrifugal Shot Blast System
CH-DD07-99	1943	ROTO PEEN Scaler and VAC PAC System
CH-DD07-99	1950	Concrete Shaver
CH-DD07-99	2099	Remotely Operated Scabbling
CH-DD08-99	32	Laser Surface Cleaning
CH-DD08-99	1476	2-D Linear Motion System
CH-DD08-99	1787	Dual Arm Work Platform Teleoperated Robotics System
CH-DD08-99	1799	Mobile Robot Worksystem (ROSIE)
CH-DD08-99	2099	Remotely Operated Scabbling
CH-DD09-99	32	Laser Surface Cleaning
CH-DD09-99	955	Laser Decontamination and Recycle of Metals
CH-DD11-99	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)
CH-DD11-99	1476	2-D Linear Motion System
CH-DD11-99	1798	Mobile Automated Characterization System
CH-DD11-99	2178	CDI Remote Characterization System
ID-7.2.03	1421	Biodegradation of Concrete
ID-7.2.03	1851	Centrifugal Shot Blast System
ID-7.2.03	1950	Concrete Shaver
ID-7.2.03	2099	Remotely Operated Scabbling
ID-7.2.03	2152	Concrete Spaller
ID-7.2.03	2321	Robotic Vacuum - Deployed Wall Scabbler / Detector
ID-7.2.04	32	Laser Surface Cleaning
ID-7.2.04	955	Laser Decontamination and Recycle of Metals
ID-7.2.04	1456	Decontamination Using Liquid Nitrogen Carrier with Solid Carbon Dioxide Pellet
ID-7.2.04	1780	Steam Vacuum Cleaning
ID-7.2.05	80	Stainless Steel Beneficial Reuse
ID-7.2.05	210	Reuse of Concrete from Contaminated Structures
ID-7.2.05	1421	Biodegradation of Concrete
ID-7.2.05	1595	SEG Recycle and Reuse of Radioactively Contaminated Scrap Metal
ID-7.2.06	42	Internal Duct Characterization System
ID-7.2.06	43	Small Pipe Characterization System (SPCS)
ID-7.2.06	74	Pipe Explorer (TM) System
ID-7.2.06	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)
ID-7.2.06	1793	Gamma Ray Imaging System
ID-7.2.06	1798	Mobile Automated Characterization System
ID-7.2.06	1810	Pipe Crawler Internal Piping Characterization System
ID-7.2.06	1840	Gamma Cam (TM) Radiation Imaging System
ID-7.2.06	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System
ID-7.2.06	1999	Ground Based Laser Induced Fluorescence Imaging
ID-7.2.06	2098	In Situ Object Counting System
ID-7.2.06	2302	Cogema 3-D Gamma Imaging
ID-7.2.07	1477	Laser Cutting and Size Reduction
ID-7.2.07	1787	Dual Arm Work Platform Teleoperated Robotics System
ID-7.2.07	1799	Mobile Robot Worksystem (ROSIE)
ID-7.2.07	1807	High Speed Clamshell Pipe Cutter
ID-7.2.07	1948	Self Contained Pipe Cutting Shear
ID-7.2.07	2100	Remote Control Concrete Demolition System
ID-7.2.07	2243	Mobile Work Platform
ID-7.2.07	2303	Track Mounted Shear/Crusher
ID-7.2.08	1787	Dual Arm Work Platform Teleoperated Robotics System
ID-7.2.08	1799	Mobile Robot Worksystem (ROSIE)
ID-7.2.08	2100	Remote Control Concrete Demolition System
ID-7.2.08	2303	Track Mounted Shear/Crusher
ID-7.2.10	179	Membrane-Supported Particle-Bound Ligands for Cesium Removal
ID-7.2.10	1543	Specialized Separation Utilizing 3M Membrane Technology
ID-7.2.11	148	Asbestos Pipe-Insulation Removal System
ID-7.2.12	1477	Laser Cutting and Size Reduction
ID-7.2.12	1807	High Speed Clamshell Pipe Cutter
ID-7.2.12	1847	Oxy-Gasoline Torch
ID-7.2.12	1948	Self Contained Pipe Cutting Shear

Table B.3 Potential Solutions Provided to Sites by DDFA in IPABS

Need ID	Tech ID	Technology Title
ID-7.2.12	2100	Remote Control Concrete Demolition System
ID-7.2.12	2303	Track Mounted Shear/Crusher
ID-7.2.12	2304	Hand Held Shear
ID-7.2.13	2329	Remote Concrete Coring
ID-7.2.14	369	Soda Blasting Decontamination Process
ID-7.2.14	1450	Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT
ID-7.2.14	1456	Decontamination Using Liquid Nitrogen Carrier with Solid Carbon Dioxide Pellet
ID-7.2.14	1780	Steam Vacuum Cleaning
ID-7.2.14	1899	Soft Media Blast Cleaning
ID-7.2.14	1971	Advanced Recyclable Media System
ID-7.2.15	31	Portable Sensor for Hazardous Waste
ID-7.2.15	1790	Portable X-Ray Fluorescence Spectrometer
ID-7.2.15	2317	Lead Paint Analyzer
ID-7.2.17	96	Rapid Surface Sampling and Archive Record (RSSAR) System
ID-7.2.19	42	Internal Duct Characterization System
ID-7.2.19	43	Small Pipe Characterization System (SPCS)
ID-7.2.19	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)
ID-7.2.19	2178	CDI Remote Characterization System
ID-7.2.19	2329	Remote Concrete Coring
ID-7.2.20	2151	Remote Underwater Characterization System (RUCS)
NV09-9902-12	74	Pipe Explorer (TM) System
NV09-9902-12	1810	Pipe Crawler Internal Piping Characterization System
NV09-9902-12	2315	Electret Ion Chambers
NV10-9902-09S	413	Associated Particle Imaging Development
NV10-9902-09S	1793	Gamma Ray Imaging System
NV10-9902-09S	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System
NV10-9902-09S	1999	Ground Based Laser Induced Fluorescence Imaging
NV10-9902-09S	2098	In Situ Object Counting System
NV10-9902-09S	2302	Cogema 3-D Gamma Imaging
OH-C901	43	Small Pipe Characterization System (SPCS)
OH-C901	74	Pipe Explorer (TM) System
OH-C901	1810	Pipe Crawler Internal Piping Characterization System
OH-F010	1807	High Speed Clamshell Pipe Cutter
OH-F010	1847	Oxy-Gasoline Torch
OH-F010	1948	Self Contained Pipe Cutting Shear
OH-F010	2243	Mobile Work Platform
OH-F010	2303	Track Mounted Shear/Crusher
OH-F010	2304	Hand Held Shear
OH-F027	1847	Oxy-Gasoline Torch
OH-F027	1948	Self Contained Pipe Cutting Shear
OH-F027	2100	Remote Control Concrete Demolition System
OH-F027	2303	Track Mounted Shear/Crusher
OH-F027	2304	Hand Held Shear
OH-F042	1953	Heat Stress Monitoring System
OH-F042	2316	Heat Stress Mitigation
OH-M901	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)
OH-M901	1793	Gamma Ray Imaging System
OH-M901	1798	Mobile Automated Characterization System
OH-M901	1840	Gamma Cam (TM) Radiation Imaging System
OH-M901	1853	Field Transportable Beta Spectrometer
OH-M901	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)
OH-M901	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System
OH-M901	1999	Ground Based Laser Induced Fluorescence Imaging
OH-M901	2098	In Situ Object Counting System
OH-M901	2302	Cogema 3-D Gamma Imaging
OH-M901	2310	Direct Reading Tritium Monitor
OH-M901	2311	Portable Scintillation Counter
OH-M901	2330	Drum Bubbler for Tritium
OH-M902	955	Laser Decontamination and Recycle of Metals
OH-M902	2314	Strippable Coatings and Fixatives

Table B.3 Potential Solutions Provided to Sites by DDFA in IPABS

Need ID	Tech ID	Technology Title
OH-M903	2314	Strippable Coatings and Fixatives
OH-M905	2312	Water Solidification
OH-M905	2313	Oil Solidification
OH-M909	2154	Concrete Dust Supression System
OH-WV902	32	Laser Surface Cleaning
OH-WV902	955	Laser Decontamination and Recycle of Metals
OH-WV902	1780	Steam Vacuum Cleaning
OH-WV902	2314	Strippable Coatings and Fixatives
ORDD-01	74	Pipe Explorer (TM) System
ORDD-01	413	Associated Particle Imaging Development
ORDD-01	596	Long Range Alpha Detector (LRAD)
ORDD-01	1790	Portable X-Ray Fluorescence Spectrometer
ORDD-01	1999	Ground Based Laser Induced Fluorescence Imaging
ORDD-02	80	Stainless Steel Beneficial Reuse
ORDD-02	234	Decontamination and Conversion of Nickel Radioactive Scrap Metal
ORDD-02	369	Soda Blasting Decontamination Process
ORDD-02	1450	Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT
ORDD-02	1595	SEG Recycle and Reuse of Radioactively Contaminated Scrap Metal
ORDD-02	1780	Steam Vacuum Cleaning
ORDD-02	1899	Soft Media Blast Cleaning
ORDD-03	1812	Rotary Peening with Captive Shot
ORDD-03	1950	Concrete Shaver
ORDD-03	1971	Advanced Recyclable Media System
ORDD-03	2099	Remotely Operated Scabbling
ORDD-03	2102	Concrete Grinder
ORDD-03	2152	Concrete Spaller
ORDD-06	1787	Dual Arm Work Platform Teleoperated Robotics System
ORDD-07	1787	Dual Arm Work Platform Teleoperated Robotics System
ORDD-07	1799	Mobile Robot Worksystem (ROSIE)
ORDD-07	2100	Remote Control Concrete Demolition System
ORDD-07	2303	Track Mounted Shear/Crusher
ORDD-08	1439	Water Soluble Chelating Polymers for RCRA Metal Removal
ORDD-08	1447	Self Assembled Monolayers on Mesoporous Supports for RCRA Metal Removal
ORDD-08	1708	Mercury Removal Using General Electric Process
ORDD-09	1807	High Speed Clamshell Pipe Cutter
ORDD-09	1948	Self Contained Pipe Cutting Shear
ORDD-09	2304	Hand Held Shear
ORDD-10	148	Asbestos Pipe-Insulation Removal System
ORDD-10	224	Thermal Conversion of Asbestos
ORDD-10	1784	VecLoader HEPA Vacuum Insulation Removal
ORDD-12	1790	Portable X-Ray Fluorescence Spectrometer
ORDD-12	1798	Mobile Automated Characterization System
ORDD-12	1840	Gamma Cam (TM) Radiation Imaging System
ORDD-12	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)
ORDD-12	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System
ORDD-12	1999	Ground Based Laser Induced Fluorescence Imaging
ORDD-12	2098	In Situ Object Counting System
ORDD-12	2178	CDI Remote Characterization System
ORDD-12	2302	Cogema 3-D Gamma Imaging
RF-DD01	42	Internal Duct Characterization System
RF-DD01	43	Small Pipe Characterization System (SPCS)
RF-DD01	74	Pipe Explorer (TM) System
RF-DD01	134	Portable X-Ray, K-Edge Heavy Metal Detector
RF-DD01	1793	Gamma Ray Imaging System
RF-DD01	1810	Pipe Crawler Internal Piping Characterization System
RF-DD01	1840	Gamma Cam (TM) Radiation Imaging System
RF-DD01	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System
RF-DD01	2098	In Situ Object Counting System
RF-DD01	2241	Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)
RF-DD01	2315	Electret Ion Chambers

Table B.3 Potential Solutions Provided to Sites by DDFA in IPABS

Need ID	Tech ID	Technology Title
RF-DD02	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)
RF-DD02	1793	Gamma Ray Imaging System
RF-DD02	1798	Mobile Automated Characterization System
RF-DD02	1840	Gamma Cam (TM) Radiation Imaging System
RF-DD02	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)
RF-DD02	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System
RF-DD02	2098	In Situ Object Counting System
RF-DD02	2241	Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)
RF-DD03	1839	Reactor Surface Contamination Stabilization
RF-DD03	2154	Concrete Dust Supression System
RF-DD03	2314	Strippable Coatings and Fixatives
RF-DD08	1854	FRHAM-TEX Anti Contamination Suit
RF-DD08	1855	NuFab Anti Contamination Suit
RF-DD08	1898	Personal Ice Cooling System (PICS)
RF-DD08	1954	Sealed-Seam Sack Suit
RF-DD08	2104	Wireless Remote Monitoring System
RF-DD09	1421	Biodegradation of Concrete
RF-DD09	1476	2-D Linear Motion System
RF-DD09	1812	Rotary Peening with Captive Shot
RF-DD09	1851	Centrifugal Shot Blast System
RF-DD09	1950	Concrete Shaver
RF-DD09	2099	Remotely Operated Scabbling
RF-DD10	32	Laser Surface Cleaning
RF-DD10	87	CORPEX Nuclear Decontamination Process
RF-DD10	369	Soda Blasting Decontamination Process
RF-DD10	955	Laser Decontamination and Recycle of Metals
RF-DD10	1450	Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT
RF-DD10	1454	Portable Concentrator for Processing Plutonium Contaminated Solutions
RF-DD10	1780	Steam Vacuum Cleaning
RF-DD10	1899	Soft Media Blast Cleaning
RF-DD10	1971	Advanced Recyclable Media System
RF-DD10	2242	Decontamination and Volume Reduction System (DVRS)
RF-DD11	1477	Laser Cutting and Size Reduction
RF-DD11	1807	High Speed Clamshell Pipe Cutter
RF-DD11	1847	Oxy-Gasoline Torch
RF-DD11	1948	Self Contained Pipe Cutting Shear
RF-DD11	2242	Decontamination and Volume Reduction System (DVRS)
RF-DD11	2304	Hand Held Shear
RF-DD11	2325	Innovative Size Reduction Nibblers
RF-DD11	2326	Innovative Size Reduction Shears
RL-DD01	310	Measurement of Radionuclides Using Ion Chromatography and Flow-Cell Scintillation Counting
RL-DD01	2151	Remote Underwater Characterization System (RUCS)
RL-DD02	1477	Laser Cutting and Size Reduction
RL-DD02	1807	High Speed Clamshell Pipe Cutter
RL-DD02	1847	Oxy-Gasoline Torch
RL-DD02	1948	Self Contained Pipe Cutting Shear
RL-DD02	2241	Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)
RL-DD02	2242	Decontamination and Volume Reduction System (DVRS)
RL-DD02	2304	Hand Held Shear
RL-DD03	277	Liquid Membrane System for Removal and Concentration of Transuranic Elements
RL-DD03	347	TRUEX/SREX
RL-DD03	1454	Portable Concentrator for Processing Plutonium Contaminated Solutions
RL-DD03	2242	Decontamination and Volume Reduction System (DVRS)
RL-DD04	1839	Reactor Surface Contamination Stabilization
RL-DD04	2314	Strippable Coatings and Fixatives
RL-DD05	42	Internal Duct Characterization System
RL-DD05	43	Small Pipe Characterization System (SPCS)
RL-DD05	74	Pipe Explorer (TM) System
RL-DD05	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)
RL-DD05	1810	Pipe Crawler Internal Piping Characterization System

Table B.3 Potential Solutions Provided to Sites by DDFA in IPABS

Need ID	Tech ID	Technology Title
RL-DD05	2158	Segmented Gate System
RL-DD05	2241	Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)
RL-DD06	87	CORPEX Nuclear Decontamination Process
RL-DD06	369	Soda Blasting Decontamination Process
RL-DD06	955	Laser Decontamination and Recycle of Metals
RL-DD06	1450	Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT
RL-DD06	1780	Steam Vacuum Cleaning
RL-DD06	1812	Rotary Peening with Captive Shot
RL-DD06	1851	Centrifugal Shot Blast System
RL-DD06	1899	Soft Media Blast Cleaning
RL-DD06	1943	ROTO PEEN Scaler and VAC PAC System
RL-DD06	1950	Concrete Shaver
RL-DD06	1971	Advanced Recyclable Media System
RL-DD06	2099	Remotely Operated Scabbling
RL-DD06	2102	Concrete Grinder
RL-DD07	1839	Reactor Surface Contamination Stabilization
RL-DD07	2314	Strippable Coatings and Fixatives
RL-DD08	1477	Laser Cutting and Size Reduction
RL-DD08	1807	High Speed Clamshell Pipe Cutter
RL-DD08	1847	Oxy-Gasoline Torch
RL-DD08	1948	Self Contained Pipe Cutting Shear
RL-DD08	2303	Track Mounted Shear/Crusher
RL-DD08	2304	Hand Held Shear
RL-DD08	2325	Innovative Size Reduction Nibblers
RL-DD08	2326	Innovative Size Reduction Shears
RL-DD09	40	Modified Light Duty Utility Arm (MLDUA)
RL-DD09	98	Houdini: Reconfigurable In Tank Mobile Robot
RL-DD09	812	Confined Sluicing End Effector
RL-DD09	1477	Laser Cutting and Size Reduction
RL-DD09	1847	Oxy-Gasoline Torch
RL-DD09	2085	Houdini-II Remotely Operated Vehicle System
RL-DD010	272	Intelligent Inspection and Survey Robot
RL-DD010	2085	Houdini-II Remotely Operated Vehicle System
RL-DD010	2099	Remotely Operated Scabbling
RL-DD011	278	Robotic End Effector for Inspection and Sampling of Storage Tanks
RL-DD017	259	Waste Inspection Tomography (WIT)
RL-DD017	260	Characterization Development
RL-DD017	2158	Segmented Gate System
RL-DD017	2241	Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)
RL-DD017	2324	WIPP Certifiable TRU Standard Waste Box Counter
RL-DD021	32	Laser Surface Cleaning
RL-DD021	80	Stainless Steel Beneficial Reuse
RL-DD021	87	CORPEX Nuclear Decontamination Process
RL-DD021	234	Decontamination and Conversion of Nickel Radioactive Scrap Metal
RL-DD021	955	Laser Decontamination and Recycle of Metals
RL-DD021	965	Removal of Radiological Contaminants from Nickel Scrap
RL-DD021	1450	Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT
RL-DD021	1595	SEG Recycle and Reuse of Radioactively Contaminated Scrap Metal
RL-DD021	1780	Steam Vacuum Cleaning
RL-DD021	1899	Soft Media Blast Cleaning
RL-DD021	1971	Advanced Recyclable Media System
RL-DD030	1807	High Speed Clamshell Pipe Cutter
RL-DD030	1948	Self Contained Pipe Cutting Shear
RL-DD030	2304	Hand Held Shear
RL-DD031	134	Portable X-Ray, K-Edge Heavy Metal Detector
RL-DD031	413	Associated Particle Imaging Development
RL-DD031	2327	Detection of Free Standing Liquids
RL-DD032	1839	Reactor Surface Contamination Stabilization
RL-DD032	2314	Strippable Coatings and Fixatives
RL-DD033	31	Portable Sensor for Hazardous Waste

Table B.3 Potential Solutions Provided to Sites by DDFA in IPABS

Need ID	Tech ID	Technology Title
RL-DD033	134	Portable X-Ray, K-Edge Heavy Metal Detector
RL-DD033	1790	Portable X-Ray Fluorescence Spectrometer
RL-DD034	42	Internal Duct Characterization System
RL-DD034	43	Small Pipe Characterization System (SPCS)
RL-DD034	74	Pipe Explorer (TM) System
RL-DD034	2178	CDI Remote Characterization System
RL-DD034	2328	Robotics Crawler
RL-DD035	33	Interactive, Computer-Enhanced, Remote-Viewing System
RL-DD035	1793	Gamma Ray Imaging System
RL-DD035	1840	Gamma Cam (TM) Radiation Imaging System
RL-DD035	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System
RL-DD035	2098	In Situ Object Counting System
RL-DD035	2171	Robot Task Space Analyzer
RL-DD035	2178	CDI Remote Characterization System
RL-DD036	42	Internal Duct Characterization System
RL-DD036	43	Small Pipe Characterization System (SPCS)
RL-DD036	74	Pipe Explorer (TM) System
RL-DD036	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)
RL-DD036	1793	Gamma Ray Imaging System
RL-DD036	1798	Mobile Automated Characterization System
RL-DD036	1810	Pipe Crawler Internal Piping Characterization System
RL-DD036	1840	Gamma Cam (TM) Radiation Imaging System
RL-DD036	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)
RL-DD036	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System
RL-DD036	2098	In Situ Object Counting System
RL-DD037	134	Portable X-Ray, K-Edge Heavy Metal Detector
RL-DD037	310	Measurement of Radionuclides Using Ion Chromatography and Flow-Cell Scintillation Counting
RL-DD037	2327	Detection of Free Standing Liquids
RL-DD038	134	Portable X-Ray, K-Edge Heavy Metal Detector
RL-DD038	310	Measurement of Radionuclides Using Ion Chromatography and Flow-Cell Scintillation Counting
RL-DD038	2327	Detection of Free Standing Liquids
RL-DD039	31	Portable Sensor for Hazardous Waste
RL-DD039	134	Portable X-Ray, K-Edge Heavy Metal Detector
RL-DD039	1790	Portable X-Ray Fluorescence Spectrometer
RL-DD039	1999	Ground Based Laser Induced Fluorescence Imaging
RL-DD039	2315	Electret Ion Chambers
RL-DD040	2329	Remote Concrete Coring
RL-DD043	33	Interactive, Computer-Enhanced, Remote-Viewing System
RL-DD043	281	Operator Interface for Robotic Applications
RL-DD043	1815	Swing-Reduced Crane Control
RL-DD045	1839	Reactor Surface Contamination Stabilization
RL-DD045	2314	Strippable Coatings and Fixatives
RL-DD046	277	Liquid Membrane System for Removal and Concentration of Transuranic Elements
RL-DD046	347	TRUEX/SREX
RL-DD046	1450	Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT
RL-DD046	1454	Portable Concentrator for Processing Plutonium Contaminated Solutions
RL-DD047	33	Interactive, Computer-Enhanced, Remote-Viewing System
RL-DD047	281	Operator Interface for Robotic Applications
SR99-4001	1477	Laser Cutting and Size Reduction
SR99-4001	1787	Dual Arm Work Platform Teleoperated Robotics System
SR99-4001	1799	Mobile Robot Worksystem (ROSIE)
SR99-4001	1807	High Speed Clamshell Pipe Cutter
SR99-4001	1815	Swing-Reduced Crane Control
SR99-4001	1847	Oxy-Gasoline Torch
SR99-4001	1948	Self Contained Pipe Cutting Shear
SR99-4001	2100	Remote Control Concrete Demolition System
SR99-4001	2152	Concrete Spaller
SR99-4001	2303	Track Mounted Shear/Crusher
SR99-4002	96	Rapid Surface Sampling and Archive Record (RSSAR) System
SR99-4002	134	Portable X-Ray, K-Edge Heavy Metal Detector

Table B.3 Potential Solutions Provided to Sites by DDFA in IPABS

Need ID	Tech ID	Technology Title
SR99-4002	1790	Portable X-Ray Fluorescence Spectrometer
SR99-4002	1793	Gamma Ray Imaging System
SR99-4002	1798	Mobile Automated Characterization System
SR99-4002	1840	Gamma Cam (TM) Radiation Imaging System
SR99-4002	1853	Field Transportable Beta Spectrometer
SR99-4002	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)
SR99-4002	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System
SR99-4002	1999	Ground Based Laser Induced Fluorescence Imaging
SR99-4002	2098	In Situ Object Counting System
SR99-4003	80	Stainless Steel Beneficial Reuse
SR99-4003	210	Reuse of Concrete from Contaminated Structures
SR99-4003	955	Laser Decontamination and Recycle of Metals
SR99-4003	1421	Biodegradation of Concrete
SR99-4003	1450	Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT
SR99-4003	1595	SEG Recycle and Reuse of Radioactively Contaminated Scrap Metal
SR99-4003	1780	Steam Vacuum Cleaning
SR99-4003	1851	Centrifugal Shot Blast System
SR99-4003	1899	Soft Media Blast Cleaning
SR99-4004	32	Laser Surface Cleaning
SR99-4004	1421	Biodegradation of Concrete
SR99-4004	1476	2-D Linear Motion System
SR99-4004	1812	Rotary Peening with Captive Shot
SR99-4004	1851	Centrifugal Shot Blast System
SR99-4004	1899	Soft Media Blast Cleaning
SR99-4004	1943	ROTO PEEN Scaler and VAC PAC System
SR99-4004	1950	Concrete Shaver
SR99-4004	2099	Remotely Operated Scabbling
SR99-4004	2102	Concrete Grinder
SR99-4004	2152	Concrete Spaller
SR99-4005	42	Internal Duct Characterization System
SR99-4005	43	Small Pipe Characterization System (SPCS)
SR99-4005	74	Pipe Explorer (TM) System
SR99-4005	134	Portable X-Ray, K-Edge Heavy Metal Detector
SR99-4005	413	Associated Particle Imaging Development
SR99-4005	1810	Pipe Crawler Internal Piping Characterization System
SR99-4006	73	In Situ Chemical Treatment of Asbestos
SR99-4006	224	Thermal Conversion of Asbestos
SR99-4006	2314	Strippable Coatings and Fixatives
SR99-4007	134	Portable X-Ray, K-Edge Heavy Metal Detector
SR99-4007	2329	Remote Concrete Coring
SR99-4008	1847	Oxy-Gasoline Torch
SR99-4008	2100	Remote Control Concrete Demolition System
SR99-4008	2107	Liquid-Nitrogen Cooled Diamond-Wire Concrete Cutting
SR99-4008	2303	Track Mounted Shear/Crusher
SR99-4010	96	Rapid Surface Sampling and Archive Record (RSSAR) System
SR99-4010	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)
SR99-4010	1798	Mobile Automated Characterization System
SR99-4010	1840	Gamma Cam (TM) Radiation Imaging System
SR99-4010	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)
SR99-4010	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System
SR99-4010	1947	System for Tracking Remediation, Exposure, Activities and Materials (STREAM)
SR99-4011	134	Portable X-Ray, K-Edge Heavy Metal Detector
SR99-4011	259	Waste Inspection Tomography (WIT)
SR99-4011	260	Characterization Development
SR99-4011	2324	WIPP Certifiable TRU Standard Waste Box Counter
SR99-4012	1839	Reactor Surface Contamination Stabilization
SR99-4012	2314	Strippable Coatings and Fixatives
SR99-4014	179	Membrane-Supported Particle-Bound Ligands for Cesium Removal
SR99-4014	1543	Specialized Separation Utilizing 3M Membrane Technology
SR99-4015	87	CORPEX Nuclear Decontamination Process

Table B.3 Potential Solutions Provided to Sites by DDFA in IPABS

Need ID	Tech ID	Technology Title
SR99-4015	1450	Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT
SR99-4015	1780	Steam Vacuum Cleaning
SR99-4015	1899	Soft Media Blast Cleaning
SR99-4016	75	Advanced Worker Protection System
SR99-4016	1898	Personal Ice Cooling System (PICS)
SR99-4016	1953	Heat Stress Monitoring System
SR99-4016	2104	Wireless Remote Monitoring System
SR99-4016	2316	Heat Stress Mitigation

Table B.4 IPABS Listed Deployments
D= Commitment; P=Potential

Need ID	TMS ID	Technology Name	D or P	Planned Deployment Date	Actual Deployment Date	PBS Code
Note: Technologies satisfying (partial or complete) Needs in this Tab are inferred, as IPABS makes no connection between Deployments (D/P) and Needs.						
The only IPABS relationship that does exist is Technology D/P to PBS and Need to PBS; these relationships are mutually exclusive.						
DDFA TECHNOLOGIES						
AL-09-01-12-MW	2242	Decontamination and Volume Reduction System (DVRS)	D	1999		AL013
CH-DD05-99; CH-DD06-99	1815	Swing-Reduced Crane Control	D	1999		CH-ANLEDD
CH-DD05-99	2100	Remote Control Concrete Demolition System	D	1998		CH-ANLEDD
CH-DD01-99	2098	In Situ Object Counting System	D	1999		CH-BRNLDD
No Idaho Need Identified	1898	Personal Ice Cooling System (PICS)	D	2000		ID-ER-110
ID-7.2.07; ID-7.2.08; ID.7.2.12	2100	Remote Control Concrete Demolition System	D	2000		ID-ER-110
ID-7.2.07; ID-7.2.08; ID.7.2.12	2303	Track Mounted Shear/Crusher	D	2000		ID-ER-110
ID.7.2.12	2304	Hand Held Shear	D	2000		ID-ER-110
ID-7.2.15	2317	Lead Paint Analyzer	D	2000		ID-ER-110
No Idaho Need Identified	2322	D&D and Remediation Optimal Planning System (DDROPS)	D	2000		ID-ER-110
No Idaho Need Identified	1898	Personal Ice Cooling System (PICS)	P	2001		ID-OIM-110
No Idaho Need for this PBS **(ID-7.2.07; ID-7.2.08; ID.7.2.12 = PBS ID-ER-110)**	2100	Remote Control Concrete Demolition System	P	2001		ID-OIM-110
No Idaho Need for this PBS **(ID-7.2.07; ID-7.2.08; ID.7.2.12 = PBS ID-ER-110)**	2303	Track Mounted Shear/Crusher	P	2001		ID-OIM-110
No Idaho Need for this PBS **(ID.7.2.12 = PBS ID-ER-110)**	2304	Hand Held Shear	P	2001		ID-OIM-110
No Idaho Need for this PBS **(ID.7.2.15 = PBS ID-ER-110)**	2317	Lead Paint Analyzer	P	2001		ID-OIM-110
No Idaho Need Identified	2322	D&D and Remediation Optimal Planning System (DDROPS)	P	2001		ID-OIM-110
No NV Need Identified	1476	2-D Linear Motion System				NV214
No NV Need Identified	1790	Portable X-Ray Fluorescence Spectrometer				NV214
NV09-9902-12	1810	Pipe Crawler Internal Piping Characterization System	P	2000		NV214
No NV Need Identified	1943	ROTO PEEN Scaler and VAC PAC System				NV214
OH-F010	1847	Oxy-Gasoline Torch	D	1998	08/30/1998	OH-FN-01
OH-F010	1847	Oxy-Gasoline Torch	D	1998	08/30/1998	OH-FN-02
No Fernald need Identified	1851	Centrifugal Shot Blast System	D	1998	07/30/1998	OH-FN-02
RF-DD11	1847	Oxy-Gasoline Torch	P	1999		RF018
RF-DD11	1847	Oxy-Gasoline Torch	P	2000		RF018
RF-DD08	1898	Personal Ice Cooling System (PICS)	P	2000		RF018
No RFETS Need Identified	2100	Remote Control Concrete Demolition System	P	2000		RF018
RF-DD11	1847	Oxy-Gasoline Torch	P	1999		RF019
RF-DD01	2241	Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)	P	1999		RF019
RF-DD01	2241	Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)	P	2000		RF019
RL-DD035; RL-DD036	1840	Gamma Cam (TM) Radiation Imaging System	D	1999		RL-ER05
RL-DD035; RL-DD036	2098	In Situ Object Counting System	P			RL-ER05
No RL Need Identified	1795	Mobile Integrated Temporary Utility System	D	1999		RL-ER06

Table B.4 IPABS Listed Deployments
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RL-DD030 **(RL-DD02 = PBS RL-TP05; RL-DD08 = PBS RL-TP08)**	1807	High Speed Clamshell Pipe Cutter	D			RL-ER06
No RL Need Identified for this PBS **(RL-DD02 = PBS RL-TP05; RL-DD08 & RL-DD09 = PBS RL-TP08)**	1847	Oxy-Gasoline Torch	D	1998		RL-ER06
No RL Need Identified	1898	Personal Ice Cooling System (PICS)	P	1999		RL-ER06
No RL Need Identified for this PBS **(RL-DD036 = PBS RL-ER05)**	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	D	1999		RL-ER06
No RL Need Identified for this PBS **(RL-DD035; RL-DD036 = PBS RL-ER05)**	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	D	1999		RL-ER06
No RL Need Identified for this PBS **(RL-DD06 = PBS RL-TP08)**	1950	Concrete Shaver	D			RL-ER06
No RL Need Identified	1953	Heat Stress Monitoring System	D			RL-ER06
No RL Need Identified	1954	Sealed-Seam Sack Suit	D	2000		RL-ER06
No RL Need Identified for this PBS **(RL-DD06 = PBS RL-TP08)**	2102	Concrete Grinder	D			RL-ER06
No RL Need Identified	2103	RESRAD-Build	D	1999		RL-ER06
No RL Need Identified	2104	Wireless Remote Monitoring System	D			RL-ER06
No RL Need Identified	2152	Concrete Spaller	D			RL-ER06
No RL Need Identified	2153	Compact Subsurface Investigation System	D			RL-ER06
No RL Need Identified	2154	Concrete Dust Supression System	D			RL-ER06
No RL Need Identified for this PBS **(RL-DD035; RL-DD036 = PBS RL-ER05)**	1840	Gamma Cam (TM) Radiation Imaging System	D	1998		RL-TP01
No RL Need Identified	1898	Personal Ice Cooling System (PICS)	P			RL-TP05
RL-DD05	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	P	2000		RL-TP08
SR99-4002	1790	Portable X-Ray Fluorescence Spectrometer	P	2004		SR-FA02
SR99-4002	1790	Portable X-Ray Fluorescence Spectrometer	P	2004		SR-FA06
SR99-4002	1790	Portable X-Ray Fluorescence Spectrometer	P	2005		SR-FA03
SR99-4002	1790	Portable X-Ray Fluorescence Spectrometer	P	2005		SR-FA04
SR99-4002	1790	Portable X-Ray Fluorescence Spectrometer	P	2005		SR-FA05
SR99-4002	1790	Portable X-Ray Fluorescence Spectrometer	P	2005		SR-FA07
SR99-4002	1790	Portable X-Ray Fluorescence Spectrometer	P	2008		SR-FA08
SR99-4002	1790	Portable X-Ray Fluorescence Spectrometer	P	2008		SR-FA09
SR99-4002	1790	Portable X-Ray Fluorescence Spectrometer	P	2008		SR-FA10
SR99-4002	1790	Portable X-Ray Fluorescence Spectrometer	P	2008		SR-FA15
SR99-4002	1790	Portable X-Ray Fluorescence Spectrometer	P	2014		SR-FA11
SR99-4002	1790	Portable X-Ray Fluorescence Spectrometer	P	2038		SR-FA12

Table B.4 IPABS Listed Deployments
D= Commitment; P=Potential

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SR99-4002; SR99-4010	1798	Mobile Automated Characterization System	P	2004		SR-FA02
SR99-4002; SR99-4010	1798	Mobile Automated Characterization System	P	2004		SR-FA06
SR99-4002; SR99-4010	1798	Mobile Automated Characterization System	P	2005		SR-FA03
SR99-4002; SR99-4010	1798	Mobile Automated Characterization System	P	2005		SR-FA04
SR99-4002; SR99-4010	1798	Mobile Automated Characterization System	P	2005		SR-FA05
SR99-4002; SR99-4010	1798	Mobile Automated Characterization System	P	2005		SR-FA07
SR99-4002; SR99-4010	1798	Mobile Automated Characterization System	P	2008		SR-FA08
SR99-4002; SR99-4010	1798	Mobile Automated Characterization System	P	2008		SR-FA09
SR99-4002; SR99-4010	1798	Mobile Automated Characterization System	P	2008		SR-FA10
SR99-4002; SR99-4010	1798	Mobile Automated Characterization System	P	2008		SR-FA15
SR99-4002; SR99-4010	1798	Mobile Automated Characterization System	P	2014		SR-FA11
SR99-4002; SR99-4010	1798	Mobile Automated Characterization System	P	2038		SR-FA12
SR99-4002; SR99-4010	1798	Mobile Automated Characterization System	P	2051		SR-FA14
SR99-4002; SR99-4010	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	P	2004		SR-FA02
SR99-4002; SR99-4010	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	P	2004		SR-FA06
SR99-4002; SR99-4010	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	P	2005		SR-FA03
SR99-4002; SR99-4010	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	P	2005		SR-FA04
SR99-4002; SR99-4010	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	P	2005		SR-FA05
SR99-4002; SR99-4010	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	P	2005		SR-FA07
SR99-4002; SR99-4010	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	P	2008		SR-FA08
SR99-4002; SR99-4010	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	P	2008		SR-FA09
SR99-4002; SR99-4010	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	P	2008		SR-FA10
SR99-4002; SR99-4010	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	P	2008		SR-FA15
SR99-4002; SR99-4010	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	P	2014		SR-FA11
SR99-4002; SR99-4010	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	P	2038		SR-FA12
SR99-4002; SR99-4010	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	P	2051		SR-FA14
SR99-4002; SR99-4010	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	P	2004		SR-FA02
SR99-4002; SR99-4010	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	P	2004		SR-FA06
SR99-4002; SR99-4010	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	P	2005		SR-FA03
SR99-4002; SR99-4010	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	P	2005		SR-FA04
SR99-4002; SR99-4010	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	P	2005		SR-FA05
SR99-4002; SR99-4010	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	P	2005		SR-FA07
SR99-4002; SR99-4010	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	P	2008		SR-FA08
SR99-4002; SR99-4010	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	P	2008		SR-FA09
SR99-4002; SR99-4010	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	P	2008		SR-FA10
SR99-4002; SR99-4010	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	P	2008		SR-FA15
SR99-4002; SR99-4010	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	P	2014		SR-FA11
SR99-4002; SR99-4010	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	P	2038		SR-FA12
SR99-4002; SR99-4010	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	P	2051		SR-FA14
SR99-4004	1476	2-D Linear Motion System	P	2004		SR-FA02
SR99-4004	1476	2-D Linear Motion System	P	2005		SR-FA03
SR99-4004	1476	2-D Linear Motion System	P	2005		SR-FA04
SR99-4004	1476	2-D Linear Motion System	P	2005		SR-FA05
SR99-4004	1476	2-D Linear Motion System	P	2005		SR-FA07
SR99-4004	1476	2-D Linear Motion System	P	2008		SR-FA08
SR99-4004	1476	2-D Linear Motion System	P	2008		SR-FA09
SR99-4004	1476	2-D Linear Motion System	P	2008		SR-FA10
SR99-4004	1476	2-D Linear Motion System	P	2009		SR-FA13

Table B.4 IPABS Listed Deployments
D= Commitment; P=Potential

Need ID	TMS ID	Technology Name	D or P	Planned Deployment Date	Actual Deployment Date	PBS Code
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The only IPABS relationship that does exist is Technology D/P to PBS and Need to PBS; these relationships are mutually exclusive.						
SR99-4004	1476	2-D Linear Motion System	P	2014		SR-FA11
SR99-4004	1476	2-D Linear Motion System	P	2038		SR-FA12
SR99-4004	1476	2-D Linear Motion System	P	2051		SR-FA14
SR99-4004	1943	ROTO PEEN Scaler and VAC PAC System	P	2008		SR-FA15
SR99-4005	1810	Pipe Crawler Internal Piping Characterization System	P	2004		SR-FA02
SR99-4005	1810	Pipe Crawler Internal Piping Characterization System	P	2004		SR-FA06
SR99-4005	1810	Pipe Crawler Internal Piping Characterization System	P	2005		SR-FA03
SR99-4005	1810	Pipe Crawler Internal Piping Characterization System	P	2005		SR-FA04
SR99-4005	1810	Pipe Crawler Internal Piping Characterization System	P	2005		SR-FA05
SR99-4005	1810	Pipe Crawler Internal Piping Characterization System	P	2005		SR-FA07
SR99-4005	1810	Pipe Crawler Internal Piping Characterization System	P	2008		SR-FA08
SR99-4005	1810	Pipe Crawler Internal Piping Characterization System	P	2008		SR-FA09
SR99-4005	1810	Pipe Crawler Internal Piping Characterization System	P	2008		SR-FA10
SR99-4005	1810	Pipe Crawler Internal Piping Characterization System	P	2008		SR-FA15
SR99-4005	1810	Pipe Crawler Internal Piping Characterization System	P	2009		SR-FA13
SR99-4005	1810	Pipe Crawler Internal Piping Characterization System	P	2014		SR-FA11
SR99-4005	1810	Pipe Crawler Internal Piping Characterization System	P	2038		SR-FA12
SR99-4005	1810	Pipe Crawler Internal Piping Characterization System	P	2051		SR-FA14
SR99-4006	73	In Situ Chemical Treatment of Asbestos	P	2004		SR-FA02
SR99-4006	73	In Situ Chemical Treatment of Asbestos	P	2004		SR-FA06
SR99-4006	73	In Situ Chemical Treatment of Asbestos	P	2005		SR-FA03
SR99-4006	73	In Situ Chemical Treatment of Asbestos	P	2005		SR-FA04
SR99-4006	73	In Situ Chemical Treatment of Asbestos	P	2005		SR-FA05
SR99-4006	73	In Situ Chemical Treatment of Asbestos	P	2005		SR-FA07
SR99-4006	73	In Situ Chemical Treatment of Asbestos	P	2008		SR-FA08
SR99-4006	73	In Situ Chemical Treatment of Asbestos	P	2008		SR-FA09
SR99-4006	73	In Situ Chemical Treatment of Asbestos	P	2008		SR-FA10
SR99-4006	73	In Situ Chemical Treatment of Asbestos	P	2008		SR-FA15
SR99-4006	73	In Situ Chemical Treatment of Asbestos	P	2009		SR-FA13
SR99-4006	73	In Situ Chemical Treatment of Asbestos	P	2014		SR-FA11
SR99-4006	73	In Situ Chemical Treatment of Asbestos	P	2038		SR-FA12
SR99-4006	73	In Situ Chemical Treatment of Asbestos	P	2051		SR-FA14
SR99-4006	224	Thermal Conversion of Asbestos	P	2004		SR-FA02
SR99-4006	224	Thermal Conversion of Asbestos	P	2004		SR-FA06
SR99-4006	224	Thermal Conversion of Asbestos	P	2005		SR-FA03
SR99-4006	224	Thermal Conversion of Asbestos	P	2005		SR-FA04
SR99-4006	224	Thermal Conversion of Asbestos	P	2005		SR-FA05
SR99-4006	224	Thermal Conversion of Asbestos	P	2005		SR-FA07
SR99-4006	224	Thermal Conversion of Asbestos	P	2008		SR-FA08
SR99-4006	224	Thermal Conversion of Asbestos	P	2008		SR-FA09
SR99-4006	224	Thermal Conversion of Asbestos	P	2008		SR-FA10
SR99-4006	224	Thermal Conversion of Asbestos	P	2008		SR-FA15
SR99-4006	224	Thermal Conversion of Asbestos	P	2009		SR-FA13
SR99-4006	224	Thermal Conversion of Asbestos	P	2014		SR-FA11
SR99-4006	224	Thermal Conversion of Asbestos	P	2038		SR-FA12
SR99-4006	224	Thermal Conversion of Asbestos	P	2051		SR-FA14
SR99-4012	1945	Pegasus Coating Removal	P	2004		SR-FA02
SR99-4012	1945	Pegasus Coating Removal	P	2004		SR-FA06

Table B.4 IPABS Listed Deployments
D= Commitment; P=Potential

Need ID	TMS ID	Technology Name	D or P	Planned Deployment Date	Actual Deployment Date	PBS Code
Note: Technologies satisfying (partial or complete) Needs in this Tab are inferred, as IPABS makes no connection between Deployments (D/P) and Needs.						
The only IPABS relationship that does exist is Technology D/P to PBS and Need to PBS; these relationships are mutually exclusive.						
SR99-4012	1945	Pegasus Coating Removal	P	2005		SR-FA03
SR99-4012	1945	Pegasus Coating Removal	P	2005		SR-FA04
SR99-4012	1945	Pegasus Coating Removal	P	2005		SR-FA05
SR99-4012	1945	Pegasus Coating Removal	P	2005		SR-FA07
SR99-4012	1945	Pegasus Coating Removal	P	2008		SR-FA08
SR99-4012	1945	Pegasus Coating Removal	P	2008		SR-FA09
SR99-4012	1945	Pegasus Coating Removal	P	2008		SR-FA10
SR99-4012	1945	Pegasus Coating Removal	P	2008		SR-FA15
SR99-4012	1945	Pegasus Coating Removal	P	2009		SR-FA13
SR99-4012	1945	Pegasus Coating Removal	P	2014		SR-FA11
SR99-4012	1945	Pegasus Coating Removal	P	2038		SR-FA12
CMST/DDFA TECHNOLOGIES						
NV10-9902-09S	413	Associated Particle Imaging Development				NV214
NV10-9902-09S	1999	Ground Based Laser Induced Fluorescence Imaging				NV214
RL-DD035; RL-DD040	2234 (changed to 2402)	D&D Sensors for the Canyon Disposition Initiative (changed to: 3-D Visual and Gamma Ray Imaging System)	P			RL-ER05
No SRS Need Identified	78	Airborne Laser Induced Fluorescence Imaging	P	2004		SR-FA02
No SRS Need Identified	78	Airborne Laser Induced Fluorescence Imaging	P	2004		SR-FA06
No SRS Need Identified	78	Airborne Laser Induced Fluorescence Imaging	P	2005		SR-FA03
No SRS Need Identified	78	Airborne Laser Induced Fluorescence Imaging	P	2005		SR-FA04
No SRS Need Identified	78	Airborne Laser Induced Fluorescence Imaging	P	2005		SR-FA05
No SRS Need Identified	78	Airborne Laser Induced Fluorescence Imaging	P	2005		SR-FA07
No SRS Need Identified	78	Airborne Laser Induced Fluorescence Imaging	P	2008		SR-FA08
No SRS Need Identified	78	Airborne Laser Induced Fluorescence Imaging	P	2008		SR-FA09
No SRS Need Identified	78	Airborne Laser Induced Fluorescence Imaging	P	2008		SR-FA10
No SRS Need Identified	78	Airborne Laser Induced Fluorescence Imaging	P	2008		SR-FA15
No SRS Need Identified	78	Airborne Laser Induced Fluorescence Imaging	P	2014		SR-FA11
No SRS Need Identified	78	Airborne Laser Induced Fluorescence Imaging	P	2038		SR-FA12
SR99-4002	1999	Ground Based Laser Induced Fluorescence Imaging	P	2004		SR-FA02
SR99-4002	1999	Ground Based Laser Induced Fluorescence Imaging	P	2004		SR-FA06
SR99-4002	1999	Ground Based Laser Induced Fluorescence Imaging	P	2005		SR-FA03
SR99-4002	1999	Ground Based Laser Induced Fluorescence Imaging	P	2005		SR-FA04
SR99-4002	1999	Ground Based Laser Induced Fluorescence Imaging	P	2005		SR-FA05
SR99-4002	1999	Ground Based Laser Induced Fluorescence Imaging	P	2005		SR-FA07
SR99-4002	1999	Ground Based Laser Induced Fluorescence Imaging	P	2008		SR-FA08
SR99-4002	1999	Ground Based Laser Induced Fluorescence Imaging	P	2008		SR-FA09
SR99-4002	1999	Ground Based Laser Induced Fluorescence Imaging	P	2008		SR-FA10
SR99-4002	1999	Ground Based Laser Induced Fluorescence Imaging	P	2008		SR-FA15
SR99-4002	1999	Ground Based Laser Induced Fluorescence Imaging	P	2014		SR-FA11
SR99-4002	1999	Ground Based Laser Induced Fluorescence Imaging	P	2038		SR-FA12
SR99-4002	1999	Ground Based Laser Induced Fluorescence Imaging	P	2051		SR-FA14
SR99-4005; SR99-4011	134	Portable X-Ray, K-Edge Heavy Metal Detector	D	1999		SR-FA18
SR99-4005; SR99-4011	134	Portable X-Ray, K-Edge Heavy Metal Detector	P	2004		SR-FA02
SR99-4005; SR99-4011	134	Portable X-Ray, K-Edge Heavy Metal Detector	P	2005		SR-FA03
SR99-4005; SR99-4011	134	Portable X-Ray, K-Edge Heavy Metal Detector	P	2005		SR-FA04
SR99-4005; SR99-4011	134	Portable X-Ray, K-Edge Heavy Metal Detector	P	2005		SR-FA05

Table B.4 IPABS Listed Deployments
D= Commitment; P=Potential

Need ID	TMS ID	Technology Name	D or P	Planned Deployment Date	Actual Deployment Date	PBS Code
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SR99-4005; SR99-4011	134	Portable X-Ray, K-Edge Heavy Metal Detector	P	2005		SR-FA07
SR99-4005; SR99-4011	134	Portable X-Ray, K-Edge Heavy Metal Detector	P	2008		SR-FA08
SR99-4005; SR99-4011	134	Portable X-Ray, K-Edge Heavy Metal Detector	P	2008		SR-FA09
SR99-4005; SR99-4011	134	Portable X-Ray, K-Edge Heavy Metal Detector	P	2008		SR-FA10
SR99-4005; SR99-4011	134	Portable X-Ray, K-Edge Heavy Metal Detector	P	2008		SR-FA15
SR99-4005; SR99-4011	134	Portable X-Ray, K-Edge Heavy Metal Detector	P	2009		SR-FA13
SR99-4005; SR99-4011	134	Portable X-Ray, K-Edge Heavy Metal Detector	P	2014		SR-FA11
SR99-4005; SR99-4011	134	Portable X-Ray, K-Edge Heavy Metal Detector	P	2038		SR-FA12
INDP/DDFA TECHNOLOGIES						
NV09-9902-12	74	Pipe Explorer (TM) System				NV214
OH-C901	74	Pipe Explorer (TM) System	P	2000		OH-CL-02-D
SR99-4004	32	Laser Surface Cleaning	P	2004		SR-FA02
SR99-4004	32	Laser Surface Cleaning	P	2004		SR-FA06
SR99-4004	32	Laser Surface Cleaning	P	2005		SR-FA03
SR99-4004	32	Laser Surface Cleaning	P	2005		SR-FA04
SR99-4004	32	Laser Surface Cleaning	P	2005		SR-FA05
SR99-4004	32	Laser Surface Cleaning	P	2005		SR-FA07
SR99-4004	32	Laser Surface Cleaning	P	2008		SR-FA08
SR99-4004	32	Laser Surface Cleaning	P	2008		SR-FA09
SR99-4004	32	Laser Surface Cleaning	P	2008		SR-FA10
SR99-4004	32	Laser Surface Cleaning	P	2008		SR-FA15
SR99-4004	32	Laser Surface Cleaning	P	2009		SR-FA13
SR99-4004	32	Laser Surface Cleaning	P	2014		SR-FA11
SR99-4004	32	Laser Surface Cleaning	P	2038		SR-FA12
SR99-4010	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	P	2004		SR-FA02
SR99-4010	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	P	2004		SR-FA06
SR99-4010	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	P	2005		SR-FA03
SR99-4010	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	P	2005		SR-FA04
SR99-4010	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	P	2005		SR-FA05
SR99-4010	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	P	2005		SR-FA07
SR99-4010	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	P	2008		SR-FA08
SR99-4010	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	P	2008		SR-FA09
SR99-4010	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	P	2008		SR-FA10
SR99-4010	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	P	2008		SR-FA15
SR99-4010	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	P	2014		SR-FA11
SR99-4010	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	P	2038		SR-FA12
RBX/DDFA TECHNOLOGIES						
RL-DD034; RL-DD035	2178	CDI Remote Characterization System	D	1999		RL-ER05
RF-DD01	370	Waste Item Characterization and Sorting	P	1999		OH-CL-02-D
RF-DD11	1631	Proximity Sensor System Development	P	2000		RF018
RF-DD11	1631	Proximity Sensor System Development	P	2000		RF019
RF-DD02	1875	Three Dimensional Mapping Sensor and Modeling Software	P	2000		RF018
RF-DD02	1875	Three Dimensional Mapping Sensor and Modeling Software	P	2000		RF019
RF-DD08	2064	Automated Shipping Container Unpacking System	P	2000		RF018
RF-DD08	2064	Automated Shipping Container Unpacking System	P	2000		RF019
SR99-4005	43	Small Pipe Characterization System (SPCS)	P	2004		SR-FA02
SR99-4005	43	Small Pipe Characterization System (SPCS)	P	2004		SR-FA06
SR99-4005	43	Small Pipe Characterization System (SPCS)	P	2005		SR-FA03

Table B.4 IPABS Listed Deployments
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SR99-4005	43	Small Pipe Characterization System (SPCS)	P	2005		SR-FA04
SR99-4005	43	Small Pipe Characterization System (SPCS)	P	2005		SR-FA05
SR99-4005	43	Small Pipe Characterization System (SPCS)	P	2005		SR-FA07
SR99-4005	43	Small Pipe Characterization System (SPCS)	P	2008		SR-FA08
SR99-4005	43	Small Pipe Characterization System (SPCS)	P	2008		SR-FA09
SR99-4005	43	Small Pipe Characterization System (SPCS)	P	2008		SR-FA10
SR99-4005	43	Small Pipe Characterization System (SPCS)	P	2008		SR-FA15
SR99-4005	43	Small Pipe Characterization System (SPCS)	P	2009		SR-FA13
SR99-4005	43	Small Pipe Characterization System (SPCS)	P	2014		SR-FA11
SR99-4005	43	Small Pipe Characterization System (SPCS)	P	2038		SR-FA12
SR99-4005	43	Small Pipe Characterization System (SPCS)	P	2051		SR-FA14
7000 SERIES (UNCLAIMED/UNIDENTIFIED) TECHNOLOGIES						
Technologies listed in this section either did not have a TMS ID Number at the time of data input or the available TMS ID Number was not known to the data entry person at the site. Where possible, the correct TMS ID Number & Title have been entered in bold. Some listed technologies may be commercial non-DDFA supported solutions.						
SR99-4002; SR99-4005	7554 **2382**	LRAD Based **(BNFL IonSens; LRAD for Component Monitoring)**	D	1999		SR-FA18
SR99-4002; SR99-4005	7554 **2382**	LRAD Based **(BNFL IonSens; LRAD for Component Monitoring)**	D	1999		SR-FA20
NV10-9902-09S	7569 **1942**	Position Sensitive Radiation Detector/Monitor **Surface Contamination Monitor**	D	1999		NV214
CH-DD01-99	7716 **2374**	Multi Agency Site Survey and Investigation Manual	D	1999	03/31/1999	CH-BRNLDD
RL-DD037	7742 **2327**	Detection of Free Standing Liquids	D	1999		RL-ER05
NV07-9902-05	7764 **1477**	Oversize TRU Waste Laser Cutting System **Laser Cutting & Size Reduction**	D	1999		NV350
	7765	Vitrification Expended Materials Processing	D	1999		OH-WV-01
	7766	Sonatol SCS-300 decontamination system	D	1999		OH-CL-02-D
	7768	Prototype Tritium Air Monitor from standard commercially available components	D	1999		SR-SF02
OH-M901	7773 **2311**	Lumni-Scint Portable Liquid Scintillation Counter **Portable Scintillation Counter**	D	1999		OH-MB-02
OH-M901	7778 **2310 & 2933**	Overhoff Surface Monitoring System **Direct Reading Tritium Monitor & Real-Time surface Tritium Monitor**	D	1999		OH-MB-02
SR99-4012	7839 **2314**	Strippable Coatings **& Fixatives (ALARA 1146 Cavity Decon)**	D	1999		SR-FA18
SR99-4002; SR99-4007	7840 **2315**	Electret Ionization Chambers (E-PERM)	D	1999		SR-FA18
	7563	On-line Chromium (6+) Monitor	D			RL-ER08
	7741	Century Alpha CAM	D			RL-ER06
	7568	Plutonium Stabilization and Packaging System	P	1999		RF008
OH-M905	7774 **2312**	Waterworks Crystal Super-absorbent Polymer Water Solidification	P	1999		OH-MB-02
OH-M905	7779 **2313**	NOCHAR Tritiated Oil Solidification (Petro Bond System)	P	1999		OH-MB-02
RF-DD11	7826 **2326**	RFETS D&D Initiative - Enhanced Cutting Tools **Innovative Size Reduction Shears**	P	1999		RF018
RF-DD11	7828 **2325**	FY98 ASTD Crimper Cutter **Innovative Size Reduction Nibblers**	P	1999		RF018
RF-DD11	7830 **2326**	RFETS D&D Initiative - Enhanced Cutting Tools **Innovative Size Reduction Shears**	P	1999		RF019
	7832	TMR Associates - Concrete Cleaner	P	1999		RF022
RF-DD16	7503 **2914**	Beryllium Air Monitor	P	2000		RF015
RF-DD15	7504 **2915**	Beryllium Swipe Monitor	P	2000		RF015
	7554	LRAD Based	P	2000		OH-FN-07
	7567	Plasma Arc Torch w/Enhanced Fume Control	P	2000		RF018
	7567	Plasma Arc Torch w/Enhanced Fume Control	P	2000		RF019
	7571	Radiological Characterization of Ducts (Flute Caterpillar)	P	2000		RL-TP05
RF-DD11	7578 **2916**	Robotics for D&D **Remote/Robotic Size Reduction System**	P	2000		RF019
RF-DD11	7825 **2395**	SRS LSDDP - Robotic Shear **Size Reduction & Deployment Shear Platform**	P	2000		RF018
RF-DD01	7831 **2917**	FY98 ASTD - SWB Crate Counter	P	2000		RF019
RF-DD07	7833	Sugar Fogging for Raschig Ring Removal	P	2000		RF016

Table B.4 IPABS Listed Deployments
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RF-DD07	7834	Sugar Fogging for Raschig Ring Removal	P	2000		RF019
RF-DD11	7835 **2918**	RFETS D&D Initiative - Centralized Size Reduction Facility	P	2000		RF030
	7837	Underground piping leak detection technologies	P	2000		RF014
	7838	TMR Associates - Concrete Cleaner	P	2000		RF022
RL-DD08	7738 **2919**	Robotic Platform for B-Cell Cleanout	P	2001		RL-TP08
SR99-4008	7516 **2389**	Diamond wire cutting	P	2004		SR-FA02
SR99-4008	7516 **2389**	Diamond wire cutting	P	2005		SR-FA03
SR99-4008	7516 **2389**	Diamond wire cutting	P	2005		SR-FA04
SR99-4008	7516 **2389**	Diamond wire cutting	P	2005		SR-FA05
SR99-4008	7516 **2389**	Diamond wire cutting	P	2005		SR-FA07
SR99-4008	7516 **2389**	Diamond wire cutting	P	2008		SR-FA08
SR99-4008	7516 **2389**	Diamond wire cutting	P	2008		SR-FA09
SR99-4008	7516 **2389**	Diamond wire cutting	P	2008		SR-FA10
SR99-4008	7516 **2389**	Diamond wire cutting	P	2009		SR-FA13
SR99-4008	7516 **2389**	Diamond wire cutting	P	2014		SR-FA11
SR99-4008	7516 **2389**	Diamond wire cutting	P	2038		SR-FA12
	7743	Technology for TRU Screening	P			RL-ER05

Tables B.5 Work Package PBSs and Needs

Product Line: Reactor Facilities

Work Package DD02: Fuel Storage Pools and Associated Structures D&D

Associated PBSs

ANL-E Remedial Actions	CH-ANLERA
BNL D&D Actions	CH-BRNLDD
Decontamination & Dismantlement	ID-ER-110
Pre-FY2006 Surplus Facilities Deactivation	ID-OIM-110
Post-FY2006 Surplus Facility Deactivation	ID-OIM-111
Pre-Deactivation S&M	ID-OIM-112
Post-Deactivation S&M	ID-OIM-113
Decontamination & Decommissioning	RL-ER06
K-Basin Deactivation	RL-TP09
Spent Nuclear Fuels Project	RL-WM01
RBOF Deactivation Project	SR-FA13
RBOF Monitoring Project	SR-FA22

Associated Site Needs

CH-DD01-99	Characterization for D&D of the Brookhaven Graphite Research Reactor
CH-DD08-99	Remote Decontamination of In-ground Concrete Structures
CH-DD11-99	Remote Characterization of In-ground Concrete Structures
ID-7.2.03	Concrete Decontamination
ID-7.2.04	Metal Decontamination
ID-7.2.05	Waste Recycle
ID-7.2.06	Remote Characterization
ID-7.2.07	Remote Demolition
ID-7.2.08	Robotic Tooling to use multiple end effectors
ID-7.2.09	Rapid Wood Radiological Contamination Monitor
ID-7.2.10	Treatment Technologies to Treat Reactor Canal (TRA-660) Water
ID-7.2.11	Asbestos Wrapped/Insulated Pipe Removal and Packaging
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
ID-7.2.13	Penetrations in Concrete Floor and Demolition of Concrete Roof
ID-7.2.14	Technology for Decon of Rad Contaminated Lead Shot, Brick, and Sheeting for Free Release
ID-7.2.15	Field Screening of Paint/Painted Surfaces to Identify Lead Contamination in Paint
ID-7.2.16	Field Screening of Lead (shot, bricks, sheeting) for Radionuclide Contamination
ID-7.2.17	Field Screening of Samples and Equipment Surfaces to Identify PCB Contamination
ID-7.2.18	General Use Remote Tools for Handling Small Items (e.g., pliers) or for Hooking to Rigging
ID-7.2.19	Remote/Robotic Technologies for Access and Deployment of Characterization & Sampling Tools
ID-7.2.20	Quantitative Underwater Radionuclide Characterization of Structures, Equipment, and Contaminated Pool Walls
ID-7.2.21	Removal of Two Reactors as Single Unit
ID-S.2.05	Understanding the Physics and Chemistry of Concrete Decontamination
ID-S.2.06	Understanding the Physics and Chemistry of Metal Decontamination
RL-DD064	Characterization of the 105-F Spent Fuel Basin
RL-DD065	Backfill Removal and Segregation for the 105-F Spent Fuel Basin
RL-DD066	Material Removal and Segregation for the 105-F Spent Fuel Basin
RL-SNF01	Contaminant Mapping of K-Basin
RL-SNF02	Decontamination of K-Basin Pool
RL-SNF03	Fixatives for K-Basin
RL-SNF05	Underwater Fuel Rack Cutting System
RL-SNF06	Sludge Treatment Process
SR99-4014	Basin Cleanup Technology

Tables B.5 Work Package PBSs and Needs

Work Package DD10: D&D of Reactors

Associated PBSs

ANL-E D&D Actions	CH-ANLEDD
Decontamination and Decommissioning	RL-ER06
P Reactor Deactivation Project	SR-FA08
C Reactor Deactivation Project	SR-FA09
R Reactor Deactivation Project	SR-FA10
K Reactor Deactivation Project	SR-FA11
L Reactor Deactivation Project	SR-FA12
Reactors Monitoring Project	SR-FA20

Associated Site Needs

CH-DD04-99	Improved Worker Protection Equipment
CH-DD05-99	Size Reduction of Large Concrete Structures
CH-DD06-99	Size Reduction of Massive Metal Structures
CH-DD07-99	Decontamination of Fixed Surface Contamination of Concrete (thin layer removal)
RL-DD033	Field Screening for Hazardous Materials for 105-F and 105-DR Reactors
SR99-4001	Dismantlement of Large and/or Complex Equipment and Structures
SR99-4008	Dismantlement of Concrete-Encased Piping
SR99-4009	Improved Exhaust Treatment Systems
SR99-4010	Characterization Data Management
SR99-4011	Waste Characterization
SR99-4012	Stabilization of Contaminated Equipment/Components/Surfaces
SR99-4013	Containment/Confinement Technologies
SR99-4015	Decontamination of Small Components
SR99-4016	Health and Safety Technologies

Product Line: Radionuclide Separation Facilities

Work Package DD03: Canyon Disposition Initiative

Associated PBSs

Facility Surveillance and Maintenance	RL-ER05

Associated Site Needs

RL-DD034	Remote/Robotic Technologies for CDI
RL-DD035	Visual/Spatial Imaging for CDI
RL-DD036	Radiation Survey for CDI
RL-DD037	Liquids Detection for CDI
RL-DD038	Liquids Characterization for CDI
RL-DD039	Solids (Sediment/Sludge/Dust) Characterization for CDI
RL-DD040	Concrete Characterization for CDI
RL-DD048	Volume Reduction of Equipment for CDI
RL-DD049	Waste Encapsulation and Stabilization for CDI
RL-DD050	Sealant Technologies for CDI
RL-DD051	High Profile Surface Barrier for CDI
RL-DD052	CDI - Long-term monitoring around and under the 221-U Facility
RL-DD053	Computerized modeling for facility planning, operation, and waste loading and tracking for the CDI Project
RL-DD054	CDI - Electronic job control system for the Surveillance and Maintenance Program
RL-DD055	CDI - Remote monitoring system upgrades for the Surveillance and Maintenance Program

Work Package DD05: Material Recycle and Release

Tables B.5 Work Package PBSs and Needs

Associated PBSs

LANL-ER	AL009
ANL-E Waste Operations	CH-ANLEWO
INEEL LLW/MLLW/Other Waste Program	ID-WM-101
Decontamination & Dismantlement	ID-ER-110
Industrial Sites	NV214
TRU/Mixed TRU	NV350
ETTP Decontamination & Decommissioning - Def.	OR-431
ETTP Decontamination & Decommissioning - D&D Fund	OR-433
Paducah Remedial Action	OR-523
Portsmouth Remedial Action	OR-623
Offsite Projects - Def.	OR-821
Industrial Zone Closure Project	RF014
Miscellaneous Production Zone Cluster Closure Project	RF015
Building 371 Cluster Closure Project	RF016
Building 707/750 Cluster Closure Project	RF017
Building 771/774 Cluster Closure Project	RF018
Building 776/777 Cluster Closure Project	RF019
Building 881 Cluster Closure Project	RF020
Building 991 Cluster Closure Project	RF021
Facility Surveillance and Maintenance	RL-ER05
Decontamination and Decommissioning	RL-ER06
F Canyon Deactivation Project	SR-FA02
FB Line Deactivation Project	SR-FA03
H Canyon Deactivation Project	SR-FA04
HB Line Deactivation Project	SR-FA05
235-F Deactivation Project	SR-FA06
Old HB Line Deactivation Project	SR-FA07
P Reactor Deactivation Project	SR-FA08
C Reactor Deactivation Project	SR-FA09
R Reactor Deactivation Project	SR-FA10
K Reactor Deactivation Project	SR-FA11
L Reactor Deactivation Project	SR-FA12
RBOF Reactor Deactivation Project	SR-FA13
D Area Deactivation Project	SR-FA14
M Area Deactivation Project	SR-FA15

Associated Site Needs

AL-09-01-13-DD	On-Site Quantitation of Plutonium and Americium in Soil and Concrete Rubble from D&D Projects
AL-09-01-14-DD	Quantitation of Tritium in Concrete Rubble from D&D Projects
AL-09-01-15-DD	Disposal & Recycle Technologies for Scrap Uranium Chips and Turnings
CH-MW03-99	Lead Removal, Segregation, and Disposal
ID-3.1.45	Volumetric Radioassay of Lead Sheet, Plate, Shot, & Irregular Shapes for "No DOE Rad Added" Determinations
ID-7.2.03	Concrete Decontamination
ID-7.2.04	Metal Decontamination
ID-7.2.05	Waste Recycle
ID-7.2.14	Technology for Decon of Rad Contaminated Lead Shot, Brick, and Sheeting for Free Release
ID-7.2.16	Field Screening of Lead (shot, bricks, sheeting) for Radionuclide Contamination
NV09-9902-12	Nonintrusive Surveys in Pipes and Vessels
NV10-9902-09S	Improved Detection & Characterization of Large Metal & Concrete Surfaces
NV21-9902-13	Roof Stabilization for Contaminated Facilities
NV07-9902-05	Oversize TRU Waste Size Reduction

Tables B.5 Work Package PBSs and Needs

ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-03	Improved Decontamination of Facility Concrete and Painted Surfaces
ORDD-09	Improved Non-Thermal Cutting of Process Equipment
ORDD-10	Improved Asbestos Disposition
ORDD-12	Improved Characterization of Buildings and Facilities
RF-DD01	Characterization of Contaminated Surfaces (TRU vs. Low Level)
RF-DD02	High Speed Integrated Characterization System for (1) Radioactive, (2) Hazardous and (3) Toxic Contamination
RF-DD04	Characterization for Free Release of Property and Salvageable Equipment
RF-DD09	Decontamination of Porous Surfaces
RF-DD10	Decontamination of Non-Porous Surfaces
RF-DD11	Size Reduction of Contaminated Equipment and Demolition Waste
RL-DD017	Segregation of Waste for the D&D Program
RL-DD021	Metal Decontamination and Recycling for the D&D Program
RL-DD059	Decontamination of surface contaminated lead for the Surveillance and Maintenance Program
RL-DD026-S	Contaminant Binding Science Need
SR99-4003	Material Recycle (process equipment, metal, steel, and concrete)
SR99-4004	Decontamination of Contaminated Concrete
SR99-4006	Asbestos Treatment to Allow Reuse

Work Package DD08: D&D of Processing Facilities

Associated PBSs

Decontamination & Dismantlement	ID-ER-110
Pre-FY2006 Surplus Facilities Deactivation	ID-OIM-110
Post-FY2006 Surplus Facility Deactivation	ID-OIM-111
Pre-Deactivation S&M	ID-OIM-112
Post-Deactivation S&M	ID-OIM-113
Y-12 Decontamination and Decommissioning	OR-231
Facility Surveillance and Maintenance	RL-ER05
Decontamination and Decommissioning	RL-ER06
Separations Process Research Unit	SP-SPRU
F Canyon Deactivation Project	SR-FA02
FB Line Deactivation Project	SR-FA03
H Canyon Deactivation Project	SR-FA04
HB Line Deactivation Project	SR-FA05
Old HB Line Deactivation Project	SR-FA07
D Area Deactivation Project	SR-FA14
F-Area Monitoring Project	SR-FA16
H-Area Monitoring Project	SR-FA17
D Area Monitoring Project	SR-FA19

Associated Site Needs

ID-7.2.03	Concrete Decontamination
ID-7.2.04	Metal Decontamination
ID-7.2.06	Remote Characterization
ID-7.2.07	Remote Demolition
ID-7.2.08	Robotics for D&D
ID-7.2.09	Rapid Wood Radiological Contamination Monitor
ID-7.2.11	Asbestos Wrapped/Insulated Pipe Removal and Packaging
ID-7.2.13	Penetrations in Concrete Floor and Demolition of Concrete Roof
ID-7.2.17	Field Screening of Samples and Equipment Surfaces to Indentify PCB Contamination

Tables B.5 Work Package PBSs and Needs

ID-7.2.18	General Use Remote Tools for Handling Small Items (e.g., pliers) or for Hooking to Rigging
ID-7.2.19	Remote/Robotic Technologies for Access and Deployment of Characterization & Sampling Tools
ID-S.2.05	Understanding the Physics and Chemistry of Concrete Decontamination
ID-S.2.06	Understanding the Physics and Chemistry of Metal Decontamination
ORDD-08	Mercury Removal from Metal and Porous Surfaces
RL-DD029	Critically Safe Vacuum System for 233-S
RL-DD030	Cutting Plutonium Contaminated Pipe for 233-S
RL-DD031	Non-Intrusive Detection of Pipe Contents for 233-S
RL-DD032	Contamination Fixative for 233-S
RL-DD055	CDI - Remote monitoring system upgrades for the Surveillance and Maintenance Program
RL-DD056	Facility structural life model for optimizing maintenance and time to decommission for the Surveillance and Maintenance Program
RL-DD057	Replacement roof of long-lived construction for the PUREX facility
RL-DD060	Characterization for Waste Handling, Packaging and Processing for 233-S
RL-DD061	Remote systems for characterization and clean up of the 233-S Process Hood
RL-DD062	A Method to Capture Airborne Alpha Contamination for 233-S
RL-DD063	Decontamination of Transuranic Debris for 233-S
RL-DD022-S	Photon-Assisted Decontamination Chemistry
RL-DD026-S	Contaminant Binding Science Need
SR99-4001	Dismantlement of Large and/or Complex Equipment and Structures
SR99-4008	Dismantlement of Concrete-Encased Piping
SR99-4009	Improved Exhaust Treatment Systems
SR99-4010	Characterization Data Management
SR99-4011	Waste Characterization
SR99-4012	Stabilization of Contaminated Equipment/Components/Surfaces
SR99-4013	Containment/Confinement Technologies
SR99-4015	Decontamination of Small Components
SR99-4016	Health and Safety Technologies

Product Line: Fuel and Weapon Components Fabrication Facilities

Work Package DD01: D&D of Tritium Contaminated Facilities

Associated PBSs

LANL-ER	AL009
PPPL Waste Operations	CH-PPPLWO
Main Hill Tritium	OH-MB-02
D Area Deactivation Project	SR-FA14
M Area Deactivation Project	SR-FA15
M Area Monitoring Project	SR-FA18
D Area Monitoring Project	SR-FA19
Main Hill Rad	OH-MB-04
Main Hill Non Rad	OH-MB-05
SM/PP Hill	OH-MB-06
Test Fire Valley	OH-MB-07

Associated Site Needs

AL-09-01-14-DD	Quantitation of Tritium in Concrete Rubble from D&D Projects
CH-DD09-99	Tritium Removal by Laser Heating
CH-MW07-99	Stabilization of Tritium Organic Waste
OH-M901	Improved Facility Survey Techniques
OH-M902	Decontamination Techniques for Tritiated Gloveboxes
OH-M903	Method for Controlling Off-Gassing and Removable Contamination from Tritium Piping

OH-M905	Treatment of Tritiated Pump Oils and Mercury
OH-M909	Automated Dust Suppression System
SR99-4002	Characterization of Contaminated Surfaces
SR99-4004	Decontamination of Contaminated Concrete
SR99-4005	Characterization of Inaccessible Areas
SR99-4007	Characterization of Volumetrically Contaminated Surfaces

Work Package DD11: Deactivation of 321-M Fuel Fabrication

Associated PBSs

M Area Deactivation Project	SR-FA15
M Area Monitoring Project	SR-FA18

Associated Site Needs

SR99-4001	Dismantlement of Large and/or Complex Equipment and Structures
SR99-4002	Characterization of Contaminated Surfaces
SR99-4003	Material Recycle (Process Equipment, Metal, Steel, and Concrete)
SR99-4004	Decontamination of Contaminated Concrete
SR99-4005	Characterization of Inaccessible Areas
SR99-4006	Asbestos Treatment to Allow Reuse
SR99-4007	Characterization of Volumetrically Contaminated Surfaces
SR99-4008	Dismantlement of Concrete-Encased Piping
SR99-4009	Improved Exhaust Treatment Systems
SR99-4010	Characterization Data Management
SR99-4011	Waste Characterization
SR99-4012	Stabilization of Contaminated Equipment/Components/Surfaces
SR99-4013	Containment/Confinement Technologies
SR99-4015	Decontamination of Small Components
SR99-4016	Health and Safety Technologies

Work Package DD12: D&D of Weapon Components Fabrication Facilities

Associated PBSs

LANL-ER	AL009
LANL Waste Management - Newly Generated Waste	AL012
LANL Waste Management - Legacy Waste	AL013
Pantex Plant Site Remediation Project	AL014
Pantex Waste Operations	AL015
Land Parcels Transfer at LANL	AL030
Industrial Sites	NV214
TRU/Mixed TRU	NV350
Facility D&D	OH-FN-02
Fernald Silos	OH-FN-07
Site Transition, Decommissioning & Project Completion	OH-WV-02
Y-12 Decontamination & Decommissioning	OR-231
Waste Management Project	RF002
Industrial Zone Closure Project	RF014
Miscellaneous Production Zone Cluster Closure Project	RF015
Building 371 Cluster Closure Project	RF016
Building 707/750 Cluster Closure Project	RF017
Building 771/774 Cluster Closure Project	RF018
Building 776/777 Cluster Closure Project	RF019

Tables B.5 Work Package PBSs and Needs

Building 881 Cluster Closure Project	RF020
Building 991 Cluster Closure Project	RF021
Building 779 Cluster Closure Project	RF022
PFP Deactivation	RL-TP05
Solid Waste Treatment	RL-WM04
235-F Deactivation Project	SR-FA06

Associated Site Needs

AL-07-01-12-DD	New Technologies to Decontaminate and Decommission Radioactively Contaminated Facilities
AL-07-01-13-DD	Technologies for Difficult Access Interior Contamination
AL-07-06-01-DD	Decontamination and Decommissioning (D&D) Technology Development
AL-08-06-02-DD	Decontamination of Concrete Surfaces Contaminated w/Radionuclides & High Explosives
AL-09-01-02-DD-S	Radiological Air Monitoring Needs for Current D&D/ER Operations
AL-09-01-04-DD-S	Methodology for Effective D&D of Large Environmental Sites
AL-09-01-13-DD	On-Site Quantitation of Plutonium and Americium in Soil and Concrete Rubble from D&D Projects
AL-09-01-11-MW	Characterization of Equipment Potentially Contaminated with Alpha Emitting Transuranic (TRU) Radionuclides
AL-09-01-12-MW	Decontamination and Volume Reduction of TRU and LLW Metals
AL-07-01-11-MW	Waste Sorting and Characterization
AL-07-01-14-MW	Appropriate Characterization of TRU Waste Now Stored in Fiberglass Reinforced Plywood Boxes for WIPP
AL-08-01-17-MW	Certifiability of Newly Generated TRU Waste
NV09-9902-12	Nonintrusive Surveys in Pipes and Vessels
NV10-9902-09S	Improved Detection & Characterization of Large Metal & Concrete Surfaces
NV21-9902-13	Roof Stabilization for Contaminated Facilities
NV07-9902-05	Oversize TRU Waste Size Reduction
OH-F010	Improved dismantlement of process piping and conduit
OH-F027	Improved Equipment Dismantlement
OH-F042	Telemetric Monitoring of Heat Stress
OH-WV-901	Characterization of Low-Level Transuranic Waste
ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-03	Improved Decontamination of Facility Concrete and Painted Surfaces
ORDD-09	Improved Non-Thermal Cutting of Process Equipment
ORDD-10	Improved Asbestos Disposition
ORDD-12	Improved Characterization of Buildings and Facilities
RF-DD01	Characterization of Contaminated Surfaces (TRU Vs. Low Level)
RF-DD02	High Speed Integrated Characterization System for (1) Radioactive, (2) Hazardous and (3) Toxic Contamination
RF-DD03	Airborne Particulates Control
RF-DD04	Characterization for Free Release of Property and Salvageable Equipment
RF-DD07	Raschig Ring Removal from Tanks
RF-DD08	Worker Protection Clothing and Systems
RF-DD09	Decontamination of Porous Surfaces
RF-DD10	Decontamination of Non-Porous Surfaces
RF-DD11	Size Reduction of Contaminated Equipment and Demolition Waste
RF-DD15	Real-Time Berylium Surface Characterization
RF-DD16	Real-Time Berylium Air Monitoring
RF-WM12	Bulk Debris Characterization Techniques
RL-DD02	Glove Box Size Reduction System for PFP
RL-DD03	Terminal Clean-out and TRU Waste Decontamination of PFP
RL-DD04	TRU Waste Fixatives for PFP
RL-DD022-S	Photon-Assisted Decontamination Chemistry
RL-DD025-S	Effluent Capture
RL-DD026-S	Contaminant Binding Science Need
RL-DD030-S	Polystyrene Cube Analysis for the Plutonium Finishing Plant (PFP)
RL-DD031-S	Polystyrene Off-Gas Analysis for the Plutonium Finishing Plant (PFP)

RL-DD032-S	Measurement of Moisture Content in Plutonium Oxides and other Materials for the Plutonium Finishing Plant (PFP)
RL-MW02	Remotely Controlled Volume Reduction Techniques for RH MLLW and RH TRUW.
RL-MW03	Remote Characterization to Distinguish TRUW from Non-TRUW Portions of Various-Sized Debris in a High Beta/Gamma Field
RL-MW04	Remote Decontamination of RH-TRUW Debris to Support Reclassification into Non-TRU Category

Work Package DD15: D&D of Facilities Contaminated with High Explosives

Associated PBSs

Pantex Plant Site Remediation Project	AL014
Pantex Waste Operations	AL015

Associated Site Needs

AL-07-06-01-DD	Decontamination and Decommissioning (D&D) Technology Development
AL-08-06-02-DD	Decontamination of Concrete Surfaces Contaminated w/Radionuclides & High Explosive Materials Using Microbially Influence Degradation

Product Line: Laboratory Facilities

Work Package DD07: Hot Cell Facilities and Laboratory Equipment D&D

Associated PBSs

LANL-ER	AL009
King Avenue Site Decontamination	OH-CL-01
West Jefferson Site Decontamination	OH-CL-02
ETEC Remediation	OAK-007
Lab for Energy-Related Health Research LEHR	OK-010
Hot Cell Facility D&D at General AtomicsOK	OK-012
General Electric D&D (Environmental Restoration)	OK-013
ORNL Decontamination & Decommissioning - Def	OR-331
ORNL Decontamination & Decommissioning - Non Def.	OR-332
324/327 Facility Transition Project	RL-TP08
Decontamination of Laboratory Facilities 772-F & 773-A	SR-IN13

Associated Site Needs

AL-07-01-12-DD	New Technologies to Decontaminate and Decommission Radioactively Contaminated Facilities
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
AL-09-01-02-DD-S	Radiological Air Monitoring Needs for Current D&D/ER Operations
AL-09-01-04-DD-S	Methodology for Effective D&D of Large Environmental Sites
OH-C901	Robotic Device to Improve Characterization of Underground Pipe Lines
OK99-23	Field Surveillance Device for Detection of Radium-226
ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-03	Improved Decontamination of Facility Concrete and Painted Surfaces
ORDD-06	Improved Remote Decontamination Methods
ORDD-07	Remote Dismantlement Methods
ORDD-09	Improved Non-Thermal Cutting of Process Equipment
ORDD-10	Improved Asbestos Disposition
ORDD-12	Improved Characterization of Buildings and Facilities
RL-DD05	Characterization of Bldg. 324 and 327
RL-DD06	Decontamination of Bldg. 324 and 327
RL-DD07	Fixatives for Bldg. 324 and 327
RL-DD08	Remote Cutting Technologies for Bldg. 324 and 327
RL-DD09	Tank Remediation for Bldg. 324

Tables B.5 Work Package PBSs and Needs

RL-DD010	Radiation Hardened Robotics for Bldg. 324
RL-DD011	Structural Integrity Inspection Technologies - 324/327 Buildings Hot Cell Liners
RL-DD046	Clean-Out of Isolated Piping Systems in Building 324
RL-DD047	Remote Viewing for Hot Cells in Buildings 324 and 327
RL-DD022-S	Photon-Assisted Decontamination Chemistry
RL-DD025-S	Effluent Capture
RL-DD026-S	Contaminant Binding Science Need
RL-DD033-S	Reaction of Neutrons with Detectors for Building 324
RL-DD034-S	TRU Model for 324 Building Waste

Work Package DD14: Storage and Treatment Facility D&D

Associated PBSs

High-Level Waste Pretreatment	ID-HLW-101
HLW Vitrification & Tank Heel High Activity Waste Processing	OH-WV-01
Site Transition, Decommissioning & Project Completion	OH-WV-02
Project Management/Site Support	OH-WV-04
WESF Sub-Project	RL-TP02
Vitrification	SR-HL05
Pollution Prevention	SR-SW07

Associated Site Needs

ID-2.1.16	Decontamination Facility/Analytical Facility Waste Reduction
OH-WV902	Decontamination of HLW Canisters
OH-WV903	Vitrification Expended Material Processing
OH-WV908	Decontamination of High-Level Waste Contaminated Equipment
RL-DD01	Cesium Capsule Leak Detection System for WESF
RL-DD041	Capsule Integrity Assessment Method for WESF
RL-DD042	Hot Cell Window Life Extension for WESF
RL-DD043	Crane System Upgrades for Hot Cell Canyon and Cesium Capsule Pool in WESF
RL-DD044	Cesium and Strontium Removal From K3 Duct at WESF
RL-DD045	Fixatives for K3 Duct at WESF
RL-DD023-S	Cesium Source Identification
RL-DD027-S	Cesium Integrity Assessment
RL-DD028-S	Hot Cell Window Gasket and Seal Degradation
RL-DD029-S	Algae Corrosion and Growth Inhibition
SR99-1014	Cleaning of Alpha Contaminated Laundrables
SR99-2029	Alternate DWPF Canister Decon Technology
SR99-2031	Develop Remote Technology to Improve DWPF Operations
SR99-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment

APPENDIX C. DDFA PRIORITIZATION PROCESS

The Deactivation and Decommissioning Focus Area (DDFA) employs two processes or "strategies" for prioritizing program activities. These two strategies are based on near- and long-term DDFA objectives as outlined in the main body of the FY2000-2004 Multiyear Program Plan (see Section 3).

Near-term Prioritization Strategy

The cornerstone of the DDFA near-term strategy is a series of large-scale demonstrations and deployment projects (LSDDPs). In the LSDDPs, improved and innovative D&D technologies are demonstrated as part of DOE's ongoing D&D efforts. The intent of the LSDDPs is to demonstrate the potential advantages of commercially available and innovative D&D technologies over baseline technologies during D&D of surplus facilities. This approach provides a unique opportunity to evaluate innovative and improved D&D technologies side-by-side with baseline technologies in an ongoing project, and immediately implement those that are superior to the baseline.

The LSDDPs are competitively selected from Letter Proposals submitted by the DOE Operations Offices and associated field offices. The proposals reflect offers to conduct an LSDDP at one or more facility where D&D activities are ongoing or planned in the near future. The facilities considered for LSDDP fall within the D&D Focus Area Product Lines and their subcategory facility types as outlined in Linking Legacies and described in detail in Section 2 of this Multiyear Program Plan. The DDFA assembles a proposal review team that includes: Federal personnel from EM-30, EM-40, EM-50, EM-60, the U.S. Army Corps of Engineers, and personnel from other organizations. Letter Proposals are evaluated based on the following evaluation criteria and subcriteria:

1. Significance of Demonstration

- Impacts of proposed LSDDP including, but not limited to, visible skyline changes and reductions in costs, schedule, waste volume, and health and safety risks.
- Reasonableness of size, contents, and conditions of proposed facility for a LSDDP.
- Extent that proposed facility meets requirements for targeted facilities in this Request for Letter Proposal.
- Extent that the LSDDP will be able to show that the innovative technologies have significant benefits over the use of baseline technologies.
- Extent that the LSDDP will be able to address problems and technology needs in the proposed facility.
- Potential for LSDDP to demonstrate many innovative technologies.
- Vision of a "successful" LSDDP.

2. Readiness of Demonstration

- Physical accessibility of the proposed facility to be used for demonstration of innovative technologies.
- Status of Deactivation Plans, Decommissioning Plans, or other relevant planning documents for the proposed facility and ability to incorporate innovative D&D technologies into the Deactivation Plan or Decommissioning Plans.
- Status of cost estimates to decommission or deactivate the proposed facility, using baseline technologies.
- Ability to complete the proposed LSDDP within 18 to 24 months from the start date.
- Flexibility in startup date and proposed schedule.
- Extent that proposed LSDDP assists the DOE Operations Office in accomplishing its ongoing and planned deactivation and decommissioning activities.

APPENDIX C. DDFA PRIORITIZATION PROCESS

- Extent that the proposed facility has been characterized.
- Availability of an Integrating Contractor Team and Administrating Contractor for the project (if the offeror proposes an Integrating Contractor Team).
- Reasonableness of proposed approach, performance requirements, schedule, and benefits (if the offeror proposes to isolate the proposed facility from all other site activities in order to issue a competitive solicitation to acquire an Integrating Contractor Team to perform the proposed project).
- Reasonableness of plans and approach to solicit vendors of innovative technologies to participate in the proposed project.
- Extent of previous and ongoing efforts to involve vendors of innovative technologies in planning of the proposed project and preparation of the Letter Proposal.

3. Site Commitment

- Commitment of site to the LSDDP, including commitment of funds and other resources.
- Reasonableness of proposed cost for the LSDDP and funding requirements for each identified source of funds.
- Reasonableness of plans to acquire commitment of necessary funds from EM-30,
- EM-40, EM-50, EM-60, the private sector, and other sources for the LSDDP
- Importance of the LSDDP for stakeholders, including site personnel, the public, and regulators.

4. Project Management

- Willingness and ability to use an Integrating Contractor Team to manage the LSDDP.
- Willingness and ability of Integrating Contractor Team to use innovative D&D technologies in LSDDP (if the offeror proposes an Integrating Contractor Team).
- Willingness and ability of D&D Integrating Contractor Team to perform D&D jobs, using innovative technologies at other DOE facilities and commercial facilities (if the offeror proposes an Integrating Contractor Team).
- Willingness and ability to jointly manage the LSDDP and the D&D Integrating Contractor Team with the D&D Focus Area and a DOE representative from the site.
- Relevance and extent of management and technical experience, capabilities, and qualifications for the Integrating Contractor Team and each of the member firms comprising the Integrating Contractor Team (if the offeror proposes an Integrating Contractor Team).
- Reasonableness of proposed project organization and roles for each of the member firms comprising the Integrating Contractor Team (if the offeror proposes an Integrating Contractor Team).
- Reasonableness of role of current Management and Operations Contractor, Environmental Restoration and Management Contractor, Site Integrating Contractor, or equivalent in the project.

5. Program Policy Factors

Program policy factors are those factors used by the Selection Official in selecting LSDDPs that are beyond the control of the offeror. The following program policy factors shall be considered by the Selection Official in the selection process:

- It may be desirable to select project(s) for award to distribute projects among a greater geographic area.

APPENDIX C. DDFA PRIORITIZATION PROCESS

- It may be desirable to select project(s) for award of less merit than other project(s), if such a selection will optimize use of available funds by allowing more projects to be supported and not be detrimental to the overall objectives of the program.
- It may be desirable to select project(s) for award considering Federal, State, and local stakeholder sensitivities.
- It may be desirable to select project(s) for award to diversify the types of facilities hosting the large-scale D&D demonstration projects.
- It may be desirable to select project(s) for award which complement or enhance existing or planned activities of the D&D Focus Area, including collaboration with Site Technology Coordination Groups.

Once an LSDDP has been selected and project funding has been allocated to the lead Operations/Field Office, the implementing organization (usually, an Integrated Contractor Team) selects technologies for demonstration within the LSDDP. The technology screening, evaluation and selection process is slightly different for each LSSDP, but generally consists of the following evaluation criteria:

- Application to facility needs
- Application to complex needs
- Technology maturity
- Ability to adequately measure performance
- Compatibility with baseline D&D schedule
- Demonstration cost
- Expected improvement over baseline
- Waste minimization
- Technology Provider Participation

Long-term Prioritization Strategy
To address long-term needs and those needs not currently being addressed through ongoing demonstration and deployment activities (e.g., the LSDDPs and ASTD projects), the DDFA has established a strategy that supports high-priority R&D activities implemented by the EM Science Program and Crosscut Programs. DDFA's long-term needs prioritization process comprises a series of algorithms consistent with the EM-50 Work Package Ranking System (WPRS). Where possible, the needs prioritization process uses the same weighting factors employed for the ranking factors or evaluation criteria of the WPRS.

The Need prioritization process is divided into three ranking factors; 1) Need Parameters, 2) Relationship to Project Baseline Summary's (PBS's), and 3) Optimization of Overall D&D Program. These three ranking factors are given weights (e.g., 50%, 30% and 20%, respectively). Each ranking factor has a maximum possible score of 100, and each of the individual evaluation criteria are normalized to a maximum value of 10 for ease of calculation.

APPENDIX C. DDFA PRIORITIZATION PROCESS

The **Need Parameters** ranking factor measures the importance, timing, and cost savings associated with addressing the Need as well as the focus of the Need on waste streams with high technical risk for generation and disposition. The importance is measured by 1) how critical the Need is as designated by the ACPtC ranking, 2) the length of time available to address the need (with a special emphasis on the 2006 timeline), 3) the potential cost savings of the DDFA addressing the need, and 4) the technical risk associated with generation and disposition of waste streams with emphasis on the Need targeting waste streams with high technical risk. The evaluation criteria comprising the Need Parameters ranking factor are:

Need criticality, NC is determined by the current ACPtC ranking of the need. A designation of Need Critical to Success (high) = 10; Need Provides Substantial Benefit (medium) = 6, and Need Provides Significant Benefit (low) = 4.

Need Timing, NT is determined by the length of time until the need start date. Needs which start by 2001 = 10 , between 2001 and 2006 = 6, and after 2006 = 4. The date ranges and associated scoring will change with attainment of PtC goals and the transition to post 2006 clean up activities.

Waste Stream Technical Risk, WSTR is determined using data from the EM Analysis and Visualization System (AVS). The waste streams associated with a Need are assigned a generation/disposition technical risk from 1 to 5 with 5 being the highest technical risk. Thus, for a given need, WSTR is calculated as the number waste streams with a given technical risk (e.g., 5)/maximum number waste streams with a given technical risk (e.g., 5). Waste stream technical risk is given a weight of 40%, 30%, 20%, 10% and 0% for technical risk of 5, 4, 3, 2, and 1, respectively. The maximum number waste streams with technical risk i = (i.e., 2 to 5) is based on all needs evaluated by the Needs Prioritization process.

Cost Savings, CS is the potential for a newly developed technology to decrease the overall costs associated with the baseline technology. For each need the DDFA is able to address, a technology will be provided that will reduce the cost of the baseline by 20%. Thus, for all needs where baseline cost is provided, potential savings = 0.2 x baseline cost. CS= (10 x potential savings/Max (Potential Savings, for all needs)). If no cost savings information is given for a need, assume CS = 5.

The evaluation criteria are multiplied by their assigned weighting factors and then summed to determine the Need Parameters ranking factor. Weighting factors of 40%, 30%, 30%, and 0% are assumed for the Need Criticality, Need Timing, Waste Stream Technical Risk, and Cost Savings, respectively. Because of the lack of data for cost savings, DDFA currently assigns this weight a zero value, however, if good cost savings information can be obtained, a more probable weighting is 30%, 20%, 20% and 30%, respectively. The equation for the Need Parameters ranking factor is:

$$RF_{NP} = 4 \times (NC) + 3 \times (NT) + 3 \times (WSTR) + 0 \times (CS) \text{ or}$$

$$RF_{NP} = 3 \times (NC) + 2 \times (NT) + 2 \times (WSTR) + 3 \times (CS) \text{ if cost data is available}$$

APPENDIX C. DDFA PRIORITIZATION PROCESS

The **Relationship to PBS's** ranking factor is a measure of how addressing a given need will result in a benefit to its associated PBS's. This ranking factor is calculated from four separate evaluation criteria; 1) Number of PBS's for a given need, 2) Visibility of PBS's associated with the need, 3) the Cost of the Associated PBS's, and 4) the Critical Path Milestones technical risk for associated PBS's.

Number of PBS's, NPBS is calculated using a non-linear scale and must be calculated for all needs and then normalized to the maximum. Thus, for a given need, NPBS= (10 x sqrt(# PBS's)/max(sqrt(# PBS's), for all needs)).

Visibility of PBS's, VPBS is based on the # of high visibility PBS's linked to the need using a non-linear scale. Thus, for a given need, VPBS=(10 x sqrt(# of high visibility PBS's)/max(sqrt(# of high visibility PBS's, for all needs))

Cost of Associated PBS's, CPBS is calculated from the costs of the PBS's. A higher weighting (2) is given to work performed prior to or during 2006. Thus, for a given need, CPBS=(10 x sqrt(2 x sum(PBS Cost 97-2006) + sum(PBS Cost >2006))/max(sqrt(2 x sum(PBS Cost 97-2006) + sum(PBS Cost >2006)), for all needs). The date ranges and associated scoring will change with attainment of ACPtC goals and the transition to post 2006 clean up activities.

Critical Path Milestones Technical Risk, CPMTR is determined using data from the EM Interim Data Management System (IDMS). The critical path milestones for PBS's associated with a Need are assigned a technical risk from 1 to 5 with 5 being the highest technical risk. Thus, for a given need; CPMTR is calculated as the number waste streams with a given technical risk (e.g., 5)/maximum number waste streams with a given technical risk (e.g., 5). Waste stream technical risk is given a weight of 40%, 30%, 20%, 10% and 0% for technical risk of 5, 4, 3, 2, and 1, respectively. The maximum number waste streams with technical risk i (i.e., 2 to 5) is based on all needs (and associated PBS's) evaluated by the Needs Prioritization process.

An alternative to normalizing by taking the square root of ratios, is to use a piecewise linear function as employed in the WPRS to determine maximum scoring values for the evaluation criteria. Assigning maximum scoring values for a piecewise linear function, however, is a subjective process.

The evaluation criteria are multiplied by their assigned weighting factors and then summed to determine the Relationship to PBS's ranking factor. Weighting factors of 25%, 25%, 25% and 25% are assumed for the Number of PBS's, Visibility of PBS's, PBS Cost, and Critical Path Milestones Technical Risk evaluation criteria, respectively. The equation for the Relationship to PBS's ranking factor is:

$$RF_{PBS} = 2.5 \text{ x } (NPBS) + 2.5 \text{ x } (RFPBS) + 2.5 \text{ x } (CPBS) + 2.5 \text{ x } (CPMTR)$$

The **Optimization of Overall D&D Program** ranking factor is a measure of how well a need can be incorporated into a well optimized D&D program. The D&D program is already pursuing many opportunities to advance technologies into the EM complex. This area of focus will take into account the ability of the DDFA to utilize its existing projects and to group multiple projects together to optimize the overall program. This area is divided into two evaluation criteria; 1) the ability to incorporate the need into a planned LSDDP

based on site and current DDFA plans, and 2) the ability to address multiple needs as one based on their Preferred Decommissioning Technologies (PDT) structure[1].

Incorporation into a Planned LSDDP, LSDDP is a measure of how well a need can be incorporated into the existing plans of the DDFA to optimize the logistics and costs of development, demonstration, and deployment. The generation of this evaluation criteria is a manual, subjective process. If the need is at the site of a planned LSDDP and will/can be addressed during that project, then LSDDP=10.

Ability to Address Multiple Needs, AAMN is a measure of how multiple needs can be grouped, regardless of site, to benefit all. This is calculated by comparing the PDT[1] codes for the needs and normalizing the sums. Most needs have multiple PDT structures which can exactly or partially match other needs. The instances of exact PDT code matches and where at least one PDT code for a need match another need are summed (needs can only match once regardless of how many of the individual PDT codes match). Exact matches are given a higher weighting. Thus, AAMN = (10 x (5 x sum of exact matches + sum of partial matches)/max(5 x sum of exact matches + sum of partial matches)).

The evaluation criteria are multiplied by their assigned weighting factors and then summed to determine the Optimization of Overall D&D Program ranking factor. The weighting factors of 50% and 50% are assumed for the Incorporation into a Planned LSDDP and Ability to Address Multiple Needs evaluation criteria, respectively. The equation for the Optimization of Overall D&D Program ranking factor is:

$$RF_{DDFA} = 5 \times (LSDP) + 5 \times (AAMN)$$

The final score for each need evaluated by the Need Prioritization process is a weighted average of each of the three primary ranking factors.

$$\text{Need Score} = 50\% \times (RF_{NP}) + 30\% \times (RF_{PBS}) + 20\% \times (RF_{DDFA})$$

[1]The preferred decommissioning technologies (PDT) is a hierarchical structure based on the EM-40 Preferred Alternative Matrix (PAM) for D&D technologies. This structure is used to map technology needs to technical solutions available within the DDFA portfolio of technologies. The PDT structure is also used to identify similar needs from DOE sites across the complex.

Appendix D: Major Milestones

PL1 Reactor Facilities		
WP #	**Major Milestone**	**FY00**
DD02/DD10	Review EMSP grants scheduled for completion in FY1999 for potential transfer to applied R&D	Jan-00
DD02/DD10	Assess new science needs for FY2000/2001 EMSP basic science solicitation	Mar-00
DD02/DD10	Prepare Solicitation for transfer of promising EMSP projects	Jun-00
DD02	Demonstrate Integrated Vertical & Overhead Decontamination System	May-00 & Sep-00
DD10	Demonstrate/deploy (non-DOE) Ex Situ Large Bore Pipe Decon & Characterization System	Oct-99
DD02	Deploy a low-cost D&D system based on commercially available Brokk system and the compact remote operator console developed by ORNL	Sep-00
DD02	Complete deployment of innovative characterization technologies (ie, ISOCS) as part of the MARSSIM implementation at BNL	Sep-00
DD02	Deploy 3-M Empore Technology for cleanup of Savannah River basin liquids	Nov-99 & Apr-00
DD02	Deploy Selion Graver Nuclide Removal System for cleanup of Savannah River basin liquids	Apr-00
DD02	Complete Fuel Storage Pools & Associated Structures LSDDP with demonstration of four to six new and innovative D&D technologies	Sep-00
DD02/DD10	Assess unmet technical needs associated with Reactors, Fuel Pools & Associated Structures to determine R&D path forward, and Prepare Solicitation for applied and advanced/engineering development through IP/UP to address high-priority needs beginning in FY2001	Jan-00 & Jun-00
WP #	**Major Milestone**	**FY01**
DD02/DD10	Review EMSP grants scheduled for completion in FY2000 for potential transfer to applied R&D	Jan-01
DD02/DD10	Prepare Solicitation for transfer of promising EMSP projects	Jun-01
DD02	Complete integration of characterization sensors for high-rad difficult to access areas	Sep-01
DD02	Demonstrate Remote Surveillance of Facilities Awaiting D&D	Nov-00
DD02	Complete Savannah River basin liquid cleanup deployment and develop cost performance reports	Jan-01
WP #	**Major Milestone**	**FY02**
DD02/DD10	Review EMSP grants scheduled for completion in FY2001 for potential transfer to applied R&D	Jan-02
DD02/DD10	Assess new science needs for FY2002/2003 EMSP basic science solicitation	Mar-02
DD02/DD10	Prepare Solicitation for transfer of promising EMSP projects	Jun-02
DD02	Demonstrate integrated characterization sensors for high-rad difficult to access areas	Feb-02
WP #	**Major Milestone**	**FY03**
DD02/DD10	Review EMSP grants scheduled for completion in FY2002 for potential transfer to applied R&D	Jan-03
DD02/DD10	Prepare Solicitation for transfer of promising EMSP projects	Jun-03
DD02/DD10	Complete applied and advanced/engineering development through IP/UP to address high-priority needs	Sep-03
DD02/DD10	Assess unmet technical needs associated with Reactors, Fuel Pools & Associated Structures to determine R&D path forward, and Prepare Solicitation for applied and advanced/engineering development through IP/UP to address high-priority needs beginning in FY2004	Jan-03 & Jun-03
WP #	**Major Milestone**	**FY04**
DD02/DD10	Review EMSP grants scheduled for completion in FY2003 for potential transfer to applied R&D	Jan-04
DD02/DD10	Assess new science needs for FY2004/2005 EMSP basic science solicitation	Mar-04
DD02/DD10	Prepare Solicitation for transfer of promising EMSP projects	Jun-04
DD02/DD10	Demonstrate/deploy technologies developed through IP/UP to address high-priority needs	Sep-04
PL2 Radionuclide Separation Facilities		
WP #	**Major Milestone**	**FY00**
DD05/DD08	Review EMSP grants scheduled for completion in FY1999 for potential transfer to applied R&D	Jan-00
DD05/DD08	Assess new science needs for FY2000/2001 EMSP basic science solicitation	Mar-00
DD05/DD08	Prepare Solicitation for transfer of promising EMSP projects	Jun-00
DD05	Complete development of a high productivity vacuum blasting system	Sep-00
DD05	Demonstrate Online Measurement of the Progress of Decontamination	Dec-99 & Feb-00
DD05	Complete Life-Cycle Costs Analysis of Radioactive Scrap Metal Disposition	Sep-00
DD08	Complete development of the Dual Point Impedance Control system for enhanced telerobotic operations	Sep-00
DD03	Complete Canyon Disposition Initiative with the demonstration/deployment of two to four new and innovative characterization technologies	Sep-00
DD05	Deploy Position Sensitive Radiation Monitor (Surface Contamination Monitor) at NTS	Jul-00
DD08	Deploy Personnel Ice Cooling System throughout DOE sites	Sep-00
DD08	Deploy Mobile Work Platform for D&D operations at Fernald	Sep-00
DD05/DD08	Assess unmet needs associated with Radionuclide Separation Processing Facilities to determine R&D path forward, and Prepare Solicitation for applied and advanced/engineering development through IP/UP to address high-priority needs beginning in FY2001	Jan-00 & Jun-00

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WP #	Major Milestone	FY01
DD05/DD08	Review EMSP grants scheduled for completion in FY2000 for potential transfer to applied R&D	Jan-01
DD05/DD08	Prepare Solicitation for transfer of promising EMSP projects	Jun-01
DD05	Demonstrate/deploy high productivity vacuum blasting system	Apr-01
DD05	Complete integration of multiple sensors for material characterization and segregation	Sep-01
DD05	Complete integration of detection instruments for real-time volumetric radioassay of lead forms	Sep-01
DD08	Complete development and integration of the telerobotic control, including integration of the Robotic Task Space Analyzer and compact remote operator console for deployment of equipment pit D&D system based on a enhanced Schilling hydraulic manipulator	Sep-01
DD05	Deploy second application of the Position Sensitive Radiation Monitor (Surface Contamination Monitor) at NTS	Nov-00
DD05	Deploy Laser Cutting System for deployment at NTS TRU waste size reduction	Jun-01
DD05	Complete INEEL implementation of innovative processes for Recycle and Release of Concrete from D&D projects and document cost and performance	Sep-01
DD05	Initiate one (possibly two) LSDDPs (eg, Scrap Metal Recycle & Release and Processing Facility D&D)	Oct-00
WP #	**Major Milestone**	**FY02**
DD05/DD08	Review EMSP grants scheduled for completion in FY2001 for potential transfer to applied R&D	Jan-02
DD05/DD08	Assess new science needs for FY2002/2003 EMSP basic science solicitation	Mar-02
DD05/DD08	Prepare Solicitation for transfer of promising EMSP projects	Jun-02
DD05	Demonstrate multiple sensor configuration for material characterization and segregation	Aug-02
DD05	Demonstrate detection instruments for real-time volumetric radioassay of lead forms	May-02
DD08	Possible initiation of a second LSDDP	Oct-01
WP #	**Major Milestone**	**FY03**
DD05/DD08	Review EMSP grants scheduled for completion in FY2002 for potential transfer to applied R&D	Jan-03
DD05/DD08	Prepare Solicitation for transfer of promising EMSP projects	Jun-03
DD05/DD08	Complete applied and advanced/engineering development through IP/UP to address high-priority needs	Sep-03
DD05/DD08	Assess unmet needs associated with Radionuclide Separation Processing Facilities to determine R&D path forward, and Prepare Solicitation for applied and advanced/engineering development through IP/UP to address high-priority needs beginning in FY2004	Jan-03 & Jun-03
DD05/DD08	Complete implementation of LSDDP(s) initiated in FY2001 and continue implementation of LSDDP(s) initiated in FY2002	Sep-03
WP #	**Major Milestone**	**FY04**
DD05/DD08	Review EMSP grants scheduled for completion in FY2003 for potential transfer to applied R&D	Jan-04
DD05/DD08	Assess new science needs for FY2004/2005 EMSP basic science solicitation	Mar-04
DD05/DD08	Prepare Solicitation for transfer of promising EMSP projects	Jun-04
DD05/DD08	Demonstrate/deploy technologies developed through IP/UP to address high-priority needs	Sep-04
DD08	Complete implementation of LSDDP, if initiated in FY2002	Sep-04
PL3 Fuel & Weapon Components Fabrication Facilities		
WP #	**Major Milestone**	**FY00**
DD12/DD15	Review EMSP grants scheduled for completion in FY1999 for potential transfer to applied R&D	Jan-00
DD12/DD15	Assess new science needs for FY2000/2001 EMSP basic science solicitation	Mar-00
DD12/DD15	Prepare Solicitation for transfer of promising EMSP projects	Jun-00
DD12	Complete development of the Alpha Continuous Emission Monitor	Sep-00
DD12	Complete development of the Modular Manipulator for robotic applications in gloveboxes	Sep-00
DD12	Demonstrate In Situ Pipe Decontamination System	Jul-00
DD12	Initiate development of a real-time surface characterization system for beryllium for application at Rocky Flats	Oct-99
DD12	Initiate development of a beryllium air monitoring system for application at Rocky Flats	Oct-99
DD12	Deploy Remote/Robotic Size Reduction System for RFETS Building 776	Jun-00
DD12	Deploy Decontamination and Volume Reduction System at LANL	Jul-00
DD12	Procure and begin fabrication of Central Size Reduction Facility at Rocky Flats	Oct-99
DD01	Demonstrate four to six technologies at Mound LSDDP for D&D of Tritium Facilities	Sep-00
DD11	Close out LSDDP for Deactivation of Savannah River's 321-M HEU Facility and prepare final project documentation	Dec-99
DD12/DD15	Assess unmet technical needs associated with Fuel and Weapon Components Fabrication Facilities to determine R&D path forward, and Prepare Solicitation for applied and advanced/engineering development through IP/UP to address high-priority needs beginning in FY2001	Jan-00 & Jun-00
WP #	**Major Milestone**	**FY01**
DD12/DD15	Review EMSP grants scheduled for completion in FY2000 for potential transfer to applied R&D	Jan-01
DD12/DD15	Prepare Solicitation for transfer of promising EMSP projects	Jun-01
DD12	Complete fabrication of Central Size Reduction Facility at Rocky Flats	Sep-01
DD01	Complete Mound LSDDP for D&D of Tritium Facilities demonstrating four to six technologies	Sep-01
DD12	Complete LANL LSDDP with demonstration of four to six technologies	Sep-01
WP #	**Major Milestone**	**FY02**
DD12/DD15	Review EMSP grants scheduled for completion in FY2001 for potential transfer to applied R&D	Jan-02

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DD12/DD15	Assess new science needs for FY2002/2003 EMSP basic science solicitation	Mar-02
DD12/DD15	Prepare Solicitation for transfer of promising EMSP projects	Jun-02
DD15	Possible initiation of an LSDDP (eg, High Explosives Facility)	Oct-01
WP #	**Major Milestone**	**FY03**
DD12/DD15	Review EMSP grants scheduled for completion in FY2002 for potential transfer to applied R&D	Jan-03
DD12/DD15	Prepare Solicitation for transfer of promising EMSP projects	Jun-03
DD12/DD15	Complete applied and advanced/engineering development through IP/UP to address high-priority needs	Sep-03
DD12/DD15	Assess unmet technical needs associated with Fuel and Weapon Components Fabrication Facilities to determine R&D path forward, and Prepare Solicitation for applied and advanced/engineering development through IP/UP to address high-priority needs beginning in FY2004	Jan-03 & Jun-03
WP #	**Major Milestone**	**FY04**
DD12/DD15	Review EMSP grants scheduled for completion in FY2003 for potential transfer to applied R&D	Jan-04
DD12/DD15	Assess new science needs for FY2004/2005 EMSP basic science solicitation	Mar-04
DD12/DD15	Prepare Solicitation for transfer of promising EMSP projects	Jun-04
DD12/DD15	Demonstrate/deploy technologies developed through IP/UP to address high-priority needs	Sep-04
DD15	Complete implementation of LSDDP, if initiated in FY2002	Sep-04
PL4 Laboratory Facilities		
WP #	**Major Milestone**	**FY00**
DD07/DD14	Review EMSP grants scheduled for completion in FY1999 for potential transfer to applied R&D in FY2002	Jan-00
DD07/DD14	Assess new science needs for FY2000/2001 EMSP basic science solicitation	Mar-00
DD07/DD14	Assess unmet technical needs associated with Laboratory Facilities to determine R&D path forward beginning in FY2002	Jan-00
WP #	**Major Milestone**	**FY01**
DD07/DD14	Review EMSP grants scheduled for completion in FY2000 for potential transfer to applied R&D in FY2002	Jan-01
DD07/DD14	Prepare Solicitation for transfer of promising EMSP projects	Jun-01
DD07	Deploy (FY99 ASTD) Remote Work Platform for Size Reduction of B Cell at Hanford	Apr-01
DD07/DD14	Assess unmet technical needs associated with Laboratory Facilities to determine R&D path forward, and Prepare Solicitation for applied and advanced/engineering development through IP/UP to address high-priority needs beginning in FY2002	Jan-01 & Jun-01
WP #	**Major Milestone**	**FY02**
DD07/DD14	Review EMSP grants scheduled for completion in FY2001 for potential transfer to applied R&D in FY2002	Jan-02
DD07/DD14	Assess new science needs for FY2002/2003 EMSP basic science solicitation	Mar-02
DD07/DD14	Prepare Solicitation for transfer of promising EMSP projects	Jun-02
DD07	Possible initiation of LSDDP (eg, Hot Cell and Associated Equipment D&D and Storage and Treatment Facility D&D)	Oct-01
WP #	**Major Milestone**	**FY03**
DD07/DD14	Review EMSP grants scheduled for completion in FY2002 for potential transfer to applied R&D in FY2002	Jan-03
DD07/DD14	Prepare Solicitation for transfer of promising EMSP projects	Jun-03
DD07	If not initiated in FY2002, possible initiation of LSDDP	Oct-02
WP #	**Major Milestone**	**FY04**
DD07/DD14	Review EMSP grants scheduled for completion in FY2003 for potential transfer to applied R&D in FY2002	Jan-04
DD07/DD14	Assess new science needs for FY2004/2005 EMSP basic science solicitation	Mar-04
DD07/DD14	Prepare Solicitation for transfer of promising EMSP projects	Jun-04
DD07/DD14	Complete applied and advanced/engineering development through IP/UP, and begin demonstrations to address high-priority needs	Sep-04
DD07/DD14	Assess unmet technical needs associated with Laboratory Facilities to determine R&D path forward, and Prepare Solicitation for applied and advanced/engineering development through IP/UP to address high-priority needs beginning in FY2005	Jun-04
DD07	Complete implementation of LSDDP, if initiated in FY2002,	Sep-04

Appendix E: Expected Performance

WP#	Tech ID	Technology Title	Site	FY	Demo/deploy	in IPABS
DD01	tbd	Pipe Crimping & Cutting System	Mound	2000	demo	
DD01	tbd	QP Direct Reading Surface Tritium Proportional Counter System	Mound	2000	demo	
DD01	tbd	Solid State Pin Diode Direct Reading Surface Tritium Detector	Mound	2000	demo	
DD01	tbd	Rad Elec Passive Tritium Air & Surface Monitor	Mound	2000	demo	
DD02	1898	Personal Ice Cooling System (PICS)	INEEL	2000	deploy	D
DD02	2100	Remote Control Concrete Demolition System	INEEL	2000	deploy	D
DD02	2303	Track Mounted Shear/Crusher	INEEL	2000	deploy	D
DD02	2304	Hand Held Shear	INEEL	2000	deploy	D
DD02	2317	Lead Paint Analyzer	INEEL	2000	deploy	D
DD02	2322	D&D and Remediation Optimal Planning System (DDROPS)	INEEL	2000	deploy	D
DD02	1543	3-M Empore	SRS	2000	deploy	
DD02	1543	3-M Empore	SRS	2000	deploy	
DD02	2098	In Situ Object Counting System	INEEL	2000	demo	
DD02	2098	In Situ Object Counting System	BNL	2000	deploy	
DD02	2374	Implementation of MARSSIM Process	BNL	2000	deploy	
DD02	2377	Remote Surveillance of Facilities Awaiting D&D	FIU	2000	demo	
DD02	2378	Integrated Vertical & Overhead Decontamination System	FIU	2000	demo	
DD02	2378	Integrated Vertical & Overhead Decontamination System	tbd	2000	demo	
DD02	2937	(Selion Graver) NURES Nuclide Removal System	SRS	2000	deploy	
DD02	97	3D Integrated Characterization & Archiving System	ORNL	2000	demo	
DD02	tbd	Nukem Copper Recycling	INEEL	2000	demo	
DD02	tbd	Corner/Wall Scabbler	INEEL	2000	demo	
DD02	tbd	Integrated Characterization Sensors for High-rad Difficult to Access Areas	tbd	2002	demo	
DD03	2403	Non-Intrusive Liquid Level Detection System	Hanford U-Plant	2000	deploy	
DD03	1840 or 2402	2-D Gamma Cam or 3-D Gamma Modeler	Hanford U-Plant	2000	deploy	
DD03	tbd	Integrated Robotic Sampling Unit	Hanford U-Plant	2000	deploy	
DD05	1810	Pipe Crawler Internal Piping Characterization System	NTS	2000	deploy	P
DD05	1942	Position Sensitive Radiation Monitoring (SCM/SIMS)	NTS	2000	deploy	
DD05	2373	Release of Concrete for Recycle from D&D Projects	INEEL	2000	deploy	
DD05	2376	Online Measurement of the Progress of Decontamination	FIU	2000	demo	
DD05	2376	Online Measurement of the Progress of Decontamination	tbd	2000	demo	
DD05	tbd	Asbestos Destruction System	tbd	2000	deploy	
DD05	1477	Laser Cutting Size Reduction System	NTS	2001	deploy	
DD05	2224	High Productivity Vacuum Blasting System	tbd	2001	demo	
DD05	1942	Position Sensitive Radiation Monitoring (SCM/SIMS)	NTS	2001	deploy	
DD05	tbd	Real-time Volumetric Radioassay of Lead	tbd	2002	demo	
DD05	tbd	Multiple Sensor Configuration for Material Characterization and Segregation	tbd	2002	demo	
DD07	74	Pipe Explorer (TM) System	COLUMBUS	2000	deploy	P
DD07	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	HANFORD B-Cell	2000	deploy	P
DD07	7738 **2919**	Robotic Platform for B-Cell Cleanout	HANFORD B-Cell	2001	deploy	P
DD08	2171	Robot Task Space Analyzer	ORNL	2000	demo	
DD08	2173	Dual-Point Impedence Control	ORNL	2000	demo	

Appendix E: Expected Performance

WP#	Tech ID	Technology Title	Site	FY	Demo/deploy	in IPABS
DD08	2243	Mobile Work Platform	FERNALD	2000	deploy	
DD08	1898	Personal Ice Cooling System (PICS)	INEEL	2001	deploy	P
DD08	2100	Remote Control Concrete Demolition System	INEEL	2001	deploy	P
DD08	2303	Track Mounted Shear/Crusher	INEEL	2001	deploy	P
DD08	2304	Hand Held Shear	INEEL	2001	deploy	P
DD08	2317	Lead Paint Analyzer	INEEL	2001	deploy	P
DD08	2322	D&D and Remediation Optimal Planning System (DDROPS)	INEEL	2001	deploy	P
DD08	32	Laser Surface Cleaning	SRS	2004	deploy	P
DD08	43	Small Pipe Characterization System (SPCS)	SRS	2004	deploy	P
DD08	73	In Situ Chemical Treatment of Asbestos	SRS	2004	deploy	P
DD08	78	Airborne Laser Induced Fluorescence Imaging	SRS	2004	deploy	P
DD08	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	SRS	2004	deploy	P
DD08	134	Portable X-Ray, K-Edge Heavy Metal Detector	SRS	2004	deploy	P
DD08	224	Thermal Conversion of Asbestos	SRS	2004	deploy	P
DD08	1476	2-D Linear Motion System	SRS	2004	deploy	P
DD08	1790	Portable X-Ray Fluorescence Spectrometer	SRS	2004	deploy	P
DD08	1798	Mobile Automated Characterization System	SRS	2004	deploy	P
DD08	1810	Pipe Crawler Internal Piping Characterization System	SRS	2004	deploy	P
DD08	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	SRS	2004	deploy	P
DD08	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	SRS	2004	deploy	P
DD08	1999	Ground Based Laser Induced Fluorescence Imaging	SRS	2004	deploy	P
DD08	~~1945~~ **2314**	Pegasus Coating Removal **ALARA 1146 Cavity Decon** is now the preferred technology	SRS	2004	deploy	P
DD08	7516 **2389**	Diamond wire cutting	SRS	2004	deploy	P
DD10	1954	Sealed-Seam Sack Suit	HANFORD	2000	deploy	D
DD10	2375	Ex Situ Large Bore Pipe Decon & Characterization System	Charlevoix, MI	2000	deploy	
DD12	1847	Oxy-Gasoline Torch	RFETS	2000	deploy	P
DD12	1898	Personal Ice Cooling System (PICS)	RFETS	2000	deploy	P
DD12	2100	Remote Control Concrete Demolition System	RFETS	2000	deploy	P
DD12	2241	Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)	RFETS	2000	deploy	P
DD12	2242	Decontamination & Volume Reduction System	LANL	2000	deploy	
DD12	2379	In Situ Pipe Decontamination System	FIU	2000	demo	
DD12	2916	Remote/Robotic Size Reduction System for Building 776	RFETS	2000	deploy	P
DD12	7503 **2914**	Beryllium Air Monitor	RFETS	2000	deploy	P
DD12	7504 **2915**	Beryllium Swipe Monitor	RFETS	2000	deploy	P
DD12	7825 **2395**	SRS LSDDP - Robotic Shear **Size Reduction & Deployment Shear Platform**	RFETS	2000	deploy	P
DD12	7831 **2917**	FY98 ASTD - SWB Crate Counter	RFETS	2000	deploy	P
DD12	7835 **2918**	RFETS D&D Initiative - Centralized Size Reduction Facility	RFETS	2000	deploy	P
DD12	32	Laser Surface Cleaning	SRS	2004	deploy	P
DD12	43	Small Pipe Characterization System (SPCS)	SRS	2004	deploy	P
DD12	73	In Situ Chemical Treatment of Asbestos	SRS	2004	deploy	P
DD12	78	Airborne Laser Induced Fluorescence Imaging	SRS	2004	deploy	P
DD12	97	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	SRS	2004	deploy	P
DD12	224	Thermal Conversion of Asbestos	SRS	2004	deploy	P

Appendix E: Expected Performance

WP#	Tech ID	Technology Title	Site	FY	Demo/deploy	in IPABS
DD12	1790	Portable X-Ray Fluorescence Spectrometer	SRS	2004	deploy	P
DD12	1798	Mobile Automated Characterization System	SRS	2004	deploy	P
DD12	1810	Pipe Crawler Internal Piping Characterization System	SRS	2004	deploy	P
DD12	1942	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	SRS	2004	deploy	P
DD12	1946	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	SRS	2004	deploy	P
DD12	1999	Ground Based Laser Induced Fluorescence Imaging	SRS	2004	deploy	P
DD12	~~1945~~ **2314**	Pegasus Coating Removal **ALARA 1146 Cavity Decon** is now the preferred technology	SRS	2004	deploy	P
DD14	1899	Soft Media Blasting for multiple decon activities	SRS	2000	deploy	